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Volume 7, Number 1
Spring 1977

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DEPARTMENT OF LINGUISTICS
UNIVERSITY OF ILLINOIS
AT URBANA, ILLINOIS 61801



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PUBLICATION OF THE DEPARTMENT OF LINGUISTICS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

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VOLUME 7, NUMBER 1
SPRING, 1977

DEPARTMENT OF LINGUISTICS, UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS 61801

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PRELIMINARIES TO THE RECONSTRUCTION OF VERBAL
 ENDINGS IN YUK*

J. L. Morgan

1. Introduction. This note is concerned with the reconstruction of the morphology of the verbal affixes of the Yuk dialect of Yupik Eskimo. Data and some generalizations are drawn from Koo (1975), and from discussions with Professor Koo, who is nonetheless to be absolved of complicity in any errors herein.

The results here are preliminary and tentative, a first attempt at understanding the quite complicated verb paradigms of Yuk. In particular, no claim is intended about the synchronic reality of the forms presented here; insofar as any of the analysis is correct it may reflect just history, though I think at least a couple of the rules discussed--those needed to account for the *te-n*, *twc*, and *kwx* alternations, for example--can be established synchronically on grounds independent of the verbal endings. This paper takes up only the indicative verb forms, and the reader will also notice that only the gross outlines of the rule environments have been worked out, and the interactions of the rules have not been explored. These lacunae will be repaired in future work.

I will present first a morphological schema for verb endings, then some of the rules necessary to account for the phonological alternations. Finally I will present the verbal paradigms together with their reconstructed forms.

2. The morphological structure of the reconstructed verbal endings. The morphology of the Eskimo verb is very complex. The verb consists of a stem (verbal or de-nominal) followed by (potentially) a number of derivational and inflectional affixes. Word-final position in the indicative mood is occupied by a set of affixes marking the person (1, 2, 3)¹ and number (singular, dual, plural) or the subject (intransitives) or of the subject and object (transitives).²

These subject/object endings generally consist of pairs of markings, the first member marking the person of the subject/object, the second marking the number.³ In the transitive verb, object markings precede subject markings when the object is third person; otherwise subject markings precede those for objects. Number markings throughout are: singular, \emptyset ; dual, *-k-*; plural, *-t-*. Person markings are not nearly so simple, and are represented in charts to follow.

The reconstructed morphological structure of the verbal endings, including order of morphemes, is summarized in the following charts.⁴

I. Intransitive.

SUBJECT PERSON AFFIX	&	SUBJECT NUMBER AFFIX
1p { sg -a- ⁵ du/pl -ku-		sg \emptyset
2p -te-		du -k-
3p \emptyset		pl -t-

II. Transitive.

A. Third person object.

<u>OBJECT AFFIXES</u>			<u>SUBJECT AFFIXES</u>		
Person	(3p)	& Number	Person	& Number	
(when sub- ject is 3p)	{sg -a- du -k- pl -i-	sg \emptyset du -k- pl -t-	1p {sg -ka- du/pl -pu- 2p -te- 3p \emptyset	sg \emptyset du -k- pl -t-	

B. First or second person object.

<u>SUBJECT AFFIXES</u>			<u>OBJECT AFFIXES</u>		
Person	& Number		Person	& Number	
1p -m-	sg \emptyset		1p {sg -ga- du/pl -ku- 2p -te-	sg \emptyset du -k- pl -t-	
2p {sg -v+ \emptyset - du/pl -v+te-	du -k- pl -t-				
3p {sg/du \emptyset pl _a \emptyset pl _b -i-					

*3p.pl_a is used when the object is singular; 3p.pl_b for dual/plural

2. Some phonological rules necessary to account for alternations.

At least the following rules must be posited to account for the surface forms of the verbal endings (for mnemonic purposes I number the rules according to the affected segment):

$$e1: \begin{Bmatrix} x \\ k \\ t \end{Bmatrix} n \longrightarrow 1 + e + 2$$

$$e2: k \begin{Bmatrix} t \\ k \end{Bmatrix} \# \longrightarrow 1 + e + 2 + 3$$

$$e3: \begin{Bmatrix} t \\ m \end{Bmatrix} k \longrightarrow 1 + e + 2$$

k1:	k	→	x	/	$\begin{Bmatrix} p \\ t \\ k \end{Bmatrix}$
t1:	k	→	g	/	ŋ
t1:	te + t	→	ci		
t1a:	te	→	ce	/	te
t2:	te	→	n	/	$\begin{Bmatrix} ka \\ \# \end{Bmatrix}$
t3:	t	→	∅	/	$\begin{Bmatrix} t \\ p \end{Bmatrix}$
v1:	v	→	f	/	[voiceless segment]

3. The paradigms. Here are listed, underlined, the surface forms of the verbal endings. Under each form is its reconstruction; under the reconstruction is a specification of the rules that apply in deriving the surface form. In some cases the reconstructed form is not what is predicted by the morphological schemata given above. In such cases the expected form is specified, parenthesized and asterisked, next to the reconstructed form. The number of these discrepancies serves to underline the incompleteness of the analysis.

A. Intransitive.

sg	<u>-a</u> a+∅ none	sg	<u>-ten</u> <u>te+te</u> (*te+∅) t2	sg	<u>-q</u> ⁷ ∅+∅ none?
1p	du <u>-kuk</u> ku+k none	2p	du <u>-tek</u> <u>te+t</u> none	3p	du <u>-l</u> ∅+t none
		pl	<u>-ci</u> <u>te+t</u> t1	n1	<u>-t</u> ∅+t none

B. Transitive.1. Third person object.

OBJECT				
		SINGULAR	DUAL	PLURAL
S	sg	$\frac{-qa^8}{\emptyset+\emptyset+ka+\emptyset}$	$\frac{-xka}{\emptyset+k+ka+\emptyset}$	$\frac{-nka}{\emptyset+t+ka+\emptyset}$
U		none	k1	t2
B	1p du	$\frac{-puk}{\emptyset+\emptyset+pu+k}$	$\frac{-xpuk}{\emptyset+k+pu+k}$	$\frac{-puk}{\emptyset+t+pu+k}$
J		none	k1	t3
E	pl	$\frac{-put}{\emptyset+\emptyset+pu+t}$	$\frac{-xpuk}{\emptyset+k+pu+k}$ ("0+k+pu+t)	$\frac{-xput}{\emptyset+k+pu+t}$ ("0+t+pu+t)
C		none	k1	t1
T	sg	$\frac{-n}{\emptyset+\emptyset+te+\emptyset}$	$\frac{-xken}{k+k+te+\emptyset}$ ("0+k+te+0)	$\frac{-ten}{\emptyset+t+te+\emptyset}$
		t2	e1, k1, t2	t2, e1
S	2p du	$\frac{-tek}{\emptyset+\emptyset+te+k}$	$\frac{-xtek}{\emptyset+k+te+k}$	$\frac{-tek}{\emptyset+t+te+k}$
U		none	k1	t3
B	pl	$\frac{-ci}{\emptyset+\emptyset+te+t}$	$\frac{-xci}{\emptyset+k+te+t}$	$\frac{-ci}{\emptyset+t+te+t}$
J		t1	k1, t1	t3, t1
E	sg	$\frac{-a}{a+\emptyset+\emptyset+\emptyset}$	$\frac{-l}{k+\emptyset+\emptyset+\emptyset}$ ("k+l+0+0)	$\frac{-i}{i+\emptyset+\emptyset+\emptyset}$ ("i+t+0+0)
C		none	none	none
T	3p du	$\frac{-al}{a+\emptyset+\emptyset+k}$	$\frac{-xlek}{k+l+\emptyset+k}$	$\frac{-lel}{\emptyset+l+\emptyset+l}$ ("i+t+0+l)
		none	e2, k1	e2
	pl	$\frac{-at}{a+\emptyset+\emptyset+t}$	$\frac{-xlet}{k+l+\emptyset+t}$	$\frac{-it}{i+\emptyset+\emptyset+t}$ ("i+t+0+t)
		none	e2, k1	none

2. Second person object.

		OBJECT		
		SINGULAR	DUAL PLURAL	
SUBJECT	sg	<u>-mken</u> m+k+te+0 ('m+0+te+0) t2, e1	<u>-mteḵ</u> m+0+te+ḵ none	<u>-mci</u> m+0+te+t t1
	1p du	<u>-mexten</u> m+k+t+te ('m+k+te+0) t2, e1, e3, k1	<u>-mexteḵ</u> m+k+te+ḵ k1, e3	<u>-mexci</u> m+k+te+t e3, k1, t1
	pl	<u>-mtexen</u> m+t+k+te ('m+t+te+0) e3, k1, e1, t2	<u>-mceṭeḵ</u> m+te+te+ḵ ('m+t+te+ḵ) t1, t1a	<u>-mceci⁹</u> m+te+te+t ('m+t+te+t) t1, t1a

SUBJECT	sg	<u>-ten</u> 0+0+t+te ('0+0+te+0) t2, e1	<u>-teḵ</u> 0+0+te+ḵ none	<u>-ci</u> 0+0+te+t t1
	3p du	<u>-xten</u> 0+k+t+te ('0+k+te+0) t2, e1, k1	<u>-xteḵ</u> 0+k+te+ḵ k1	<u>-xci</u> 0+k+te+t k1, t1
	pl	<u>-txen</u> 0+t+k+te ('0+t+te+0) k1, t2, e1	<u>-iceṭeḵ⁹</u> i+te+te+ḵ ('i+t+te+ḵ) t1	<u>-iceci⁹</u> i+te+te+t ('i+t+te+t) t1

3. First person object.

		OBJECT		
		SINGULAR	DUAL	PLURAL
		<hr/>		
SUBJECT	sg	<u>-vṇa</u> v+0+0+ṇa+0 none	<u>-fkuḵ</u> v+0+0+ku+k v1	<u>-fkut</u> v+0+0+ku+t v1
	2p du	<u>-fteṇna</u> v+te+k+ṇa+0 k2	<u>-ftexḵuḵ</u> v+te+k+ku+ḵ v1, k1	<u>-ftexḵut</u> v+te+k+ku+t v1, k1
	pl	<u>-fcia</u> v+te+t+a+0 (v+te+t+ṇa+0) v1, t1	<u>-fcikḵ</u> v+te+t+ḵ+u+ḵ v1, t1	<u>-fcikut</u> v+te+t+ku+t v1, t1

3. First person object (continued).

		OBJECT	
		DUAL	PLURAL
S			
U	<u>-na</u>	<u>-kuk</u>	<u>-kut</u>
B	sŋ <u>Ø+Ø+ŋa+Ø</u>	<u>Ø+Ø+k+u+k</u>	<u>Ø+Ø+k+u+t</u>
J	none	none	none
E			
C	<u>-ŋŋa</u>	<u>-xkuk</u>	<u>-xkut</u>
T	3p du <u>Ø+k+ŋa+Ø</u>	<u>Ø+k+k+u+k</u>	<u>Ø+k+k+u+t</u>
	k2	k1	k1
	<u>-tŋa</u>	<u>-itkuk</u>	<u>-itkut</u>
	pl <u>Ø+t+ŋa+Ø</u>	<u>i+t+k+u+k</u>	<u>i+t+k+u+t</u>
	none	none	none

*This work was supported in part by National Science Foundation Grant SOC7 500244.

FOOTNOTES

1. There is also a "fourth person" in Eskimo, not considered here.
2. I use the terms "subject" and "object" in the European sense, because these terms will be familiar to most readers. Eskimo is in fact an ergative language, which is reflected to some extent in the fact that there seem to be more morphological parallels between intransitive subject and transitive object than between intransitive and transitive subject. It should also be pointed out that, with the explainable exception discussed in footnote 8, the third-person-object transitive endings are also used as possessive endings on nouns, with subject corresponding to possessor and object to possessed.
3. Notice that there is redundancy here (and elsewhere in the system) in that number is marked both by the number-marking affixes (Ø, -k-, -t-) and by the person-marking morpheme, the form of which depends on the number of the referent. The intransitive verb is also marked by (t)u- preceding the verbal endings, the transitive by a(q)-. These transitivity affixes have been factored out of the analysis, except for the appearance of the transitive -q- in the first-person-singular-subject/third-person-singular-object slot of the transitive paradigm.
4. There are some deviations from the patterns of these charts to be noted later.
5. The first-person-singular marker -a- alternates with -na- by virtue of an n-epenthesis rule that applies to break up certain vowel sequences; thus an even greater resemblance between the intransitive subject and transitive object markers.

6. Phonological notation is standard except, following Koo (1975), c, (unaspirated tx) and e (ɛ or ɐ according to environment). See Koo's discussion for further details.

7. This -q (where Ø is expected) is an instance of a pervasive Ø q alternation whose details are not clear to me.

8. Here the -q- is the reflex of the transitive marker posited by Koo. It may be that there is a deletion of k after q. In the corresponding possessive ending we find the expected -ka.

9. It may be that e-epenthesis should be formulated to apply in these forms (yielding te+te from t+te). If so, then the problem arises of preventing epenthesis from applying in the same way to the 2p-plural-subject/3p-dual and plural-object forms (Ø+t+te+k -xci, Ø+t+te+t -ci).

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- Koo, John H. 1975. A basic conversational Eskimo (Yuk).
University of Alaska, Fairbanks.

$$\begin{aligned}
 \mathbb{E}[\mathbf{y}|\mathbf{X}] &= \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon} \\
 \mathbf{y} &= \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}
 \end{aligned}$$

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}$$

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}$$

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}$$

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}$$

ON THE REPRESENTATION OF CONTOUR TONES
 IN GENERATIVE PHONOLOGY

Lee A. Becker

Various proposals for the phonological representation of contour tones within the generative framework have been made. We will mention those which we consider to be the most representative and influential. These proposals differ with respect to whether or not tone should be represented suprasegmentally and whether contour tones exist in the underlying representation.

	Suprasegmental	Contour Tones in UR
Wang (1967)	Feature of a syll	Yes
Woo (1967)	No	No
Leben (1971)	Yes	No

Wang included the features [contour], [rising], [falling] and [convex] with the level features [high], [central] and [mid] in his proposal universal set. Wang's basic position was that "...tone features can be treated in essentially the same way as the segmental features." (1967:104)

Woo, however, argues that some linguistic generalizations are only revealed and can only be captured if contour tones are represented as sequences of level tones. In Woo (1970) the following data from Northern Tepehuan are presented: /daaka/ 'nose' /daadaka/ 'noses' /daakadi/ 'his nose'; /kif/ 'house' /kiiki/ 'houses' /kiikisi/ 'are they houses?'; /kooso/ 'he sleeps' /kookoso/ 'they sleep'. The following preliminary and simplified rules for the assignment of tone in mono- or bisyllabic words were proposed:

$$V \rightarrow +L; \quad V \rightarrow +H/ \quad [(C)(V) \text{ --- } (C)(V)]\# \\ \text{stem}$$

It is obvious that a generalization like this one can only be made if a rising tone on a long vowel (\bar{V}) is represented as a sequence of low tone followed by high tone on two short vowels ($V\bar{V}$). Were the contour tones taken to be lexical, very complex rules would be needed to relate singular to plural to possessive, with a resultant loss of generalization.¹ Inherent in Woo's approach is the representation of long vowels and diphthongs as sequences, as well as the assumption that contour tones only occur on long vowels and diphthongs. Woo states: "Thus the fact that no rising or falling contours are found on syllables containing a single sonorant follows from the fact that there is no second sonorant to carry the second pitch specification." (1970:19-20) Were one to find contour tones on a short vowel, it would not only show Woo's assumption to be incorrect, but it would cause considerable difficulty for Woo's universal approach to the representation of contour tones.

Leben (1971) attacks Woo's view that tone is segmental while maintaining that the distinctive features of tone do not include contour tones. An important piece of support for the suprasegmental characterization of tone are the so-called 'tone melody languages'. Leben cites Mende as an example of a language of this type. In Mende the following pitch levels and contours appear on vowels: L H LH HL LHL; however, there are restrictions as to the positions in which tones can occur. While they all can appear on monosyllables, LHL and LH can only occur on monosyllables and HL can only appear on monosyllables or on the second syllable of bisyllables. Leben described these phenomena by treating the tonal melody as a feature of a morpheme. These melodies are mapped onto the vowels of a morpheme, regardless of their number. Consider the following morphemes whose tonal melodies are given in the leftmost column.

HHL	nìkìlì	nyàhâ	mbâ
HL	kényà	mbû	

In other words the generalizations about the pitch patterns on morphemes are independent of segmental composition, i.e. the number of vowels. In addition, a constraint which rules out the HLH sequence on all morphemes regardless of the number of syllables would be difficult to state if tones were a feature of segments.

Leben's evidence for the treatment of contour tones as sequences of level tones comes from processes of Tone-copying and Tone-deletion. Both Tone-copying and Tone-deletion do not involve contour tones as a whole, but rather the last level tone. Tone-deletion is formulated: [\sim H] [\sim H] [\sim H] \rightarrow [\times H] [\sim H]. The operation of Tone-deletion is illustrated in the plural formation in Mende; the indefinite plural marker /ngâa/ is suffixed to the root morpheme /mbû/ 'owl'. mbû ngâa = mbûngâa.

The operation of both Tone-copying and Tone-deletion are illustrated in the formation of compounds, which Leben claims involves the following Compound Rule:

"(a) Copy the last tone of the first member of the compound onto the first syllable of the second member.

(b) Assign a low tone to the remaining syllable of the second member."
(1971:188)

The operation of this rule is illustrated by the following forms from Mende, given in Leben (1971).

p:1 + hani = p:1 -hànì

b:1 + hani = b:1 -hànì

mbû + hani = mbû -hànì (T-copy) mbû -hànì (T-deletion)

Leben also mentions another possible treatment of this process which he refers to as Tone-extension. This is very similar to the treatment of Hyman and Schuh (1974) who treat what occurs above as a single process called Tone-incorporation: they provide examples from Hausa, Mende and Yala.

Against Woo's hypothesis of the segmental nature of tone, Leben also raises the problem of short vowels with a contour tone. These cases could conceivably be handled by allowing features like [$+$ [+hi] [$+$ lo]], or [$+$ [+L] [$+$ H] [$+$ L]] (for mbâ), but Leben argues: "In this case the claim that contour tones

are underlying sequences of level tones would be nearly empty, since the representation [+High] followed by [-High] on a segment is empirically equivalent to the representation [+Falling]." (1971:196-7)

To handle this problem Fromkin (1972) suggests: "One can however utilize a [-segmental] but tone bearing unit which could accomplish the same thing (as was proposed by Schacter and Fromkin (1968)) or adopt the Abadan Conference proposal utilizing tone-bearing non-syllabic vowels." (1972:68) The proposal of this conference, which was entitled "Tone in generative phonology" and which took place at the University of Ibadan in Nigeria in 1970, was to represent a contour tone on a short vowel, for example a rising tone as [+syllabic, +low] followed by a unit [-syllabic, +high]. Fromkin argues for her [-segmental] approach on the basis of "...certain cases where tone is the only realization of grammatical morphemes." (1972:70) She offers as an example the 'habitual' low tone morpheme of Akan. This morpheme results in a 'downstep' of a following high tone. Even if the treatment of this morpheme as a non-segmental low tone which triggers 'downstep' and is then deleted is correct, which it may be, there would still seem to be a logical jump to the assumption that all contour tones on short vowels should be treated in this manner. Just because a formal devise may be justified in one instance, we need not extend its utilization to other instances. The motivation seems to be that once the constraints of phonological theory have been weakened, by extending the class of possible grammars, why should we weaken them still further, let us take a 'free ride' and use this devise in other problem cases. The difficulty would seem to stem from the search for a universal method of the representation of contour tones.

Returning to Leben, though one may consider cases of tonal melodies as evidence that these languages represent tone suprasegmentally, and could not be described in an intuitively satisfying way without the possibility of suprasegmental representation of tone, one must raise the question of whether tone must always be represented suprasegmentally. The desire to create a universal means of representation of contour tones requires one to make this claim. This can result in the attempt to fit all languages into a framework which is appropriate only for some languages. Leben also indulges in this practice when he extends his suprasegmental representation of tone to Northern Tepehuan and Mandarin Chinese. These languages were examined by Woo (1969, 1970) and she argued that tone had to be represented segmentally in order not to miss generalizations. Leben proposes that suprasegmental tone features are mapped onto segments and that in some languages, presumably like Thai or Vietnamese for example, this mapping occurs from the very beginning of the derivation. A similar proposal was made by McCawley (1970). It seems to us that this initial mapping from suprasegmental into segmental representation makes the claim about the universal suprasegmental representation of tone vacuous.

In addition with regard to Leben and Woo, who reject contours on a segment in the underlying representation, one must point out a very important general objection which was raised by Fromkin. It was credited by her to a personal communication from Margaret Langdon: "...given a phonetic contrast one can assume that historically such a contrast will or can become restructured as an underlying phonemic contrast." (1972:66) We strongly endorse this position as a working hypothesis. One might suggest

the possibility of a similar situation existing in syntax: if a structure is created by the application of a transformational rule, it can potentially become a deep level structure generateable by the Phrase Structure Rules.

Certain parallels are evident in the methodologies of Leben, Woo and Fromkin. Below I list these facets; I refer to them together as a syndrome. This syndrome characterizes not only the work of these scholars, who were searching for a universal method of representation of contour tones, but also of other researchers who assume universals to exist at other specific levels.

1. A particular feature, set of features, device or organization is found to be necessary, by whatever criteria, to describe some phenomenon or phenomena in a particular language or languages.

2. It is assumed that this must be THE feature, set of features, device or organization that we linguists have been looking for, because of the assumption of universality at these levels. It is then applied to all other languages.

3. The extension may result in positions or descriptions of language which are counter-intuitive or reduce claims of universality to vacuity. This extension always involves the assumption that all differences between languages are of a more superficial nature, rather than reflect basic organizational differences. However, it is often the case that there is no reason for the speakers of these languages to take these superficial characteristics and patternings as anything but the basic ones. The deeper characteristics, assumed in these analyses, are in no way reflected in the data, which the speaker-hearers presumably use to form their grammars. Conversely, arguments for particular treatments of languages at stage 3. of the syndrome may have the following form: X is assumed to be the universal deep manner of representation or organization, but Y is the surface manner of representation or organization, THEREFORE the grammar of this language must include rules changing X into Y. An illustration of the syndrome as it applies to Leben, Woo and Fromkin is given below:

Leben	Woo	Fromkin
1. Mende	Northern Tepehuan	Akan
2. Suprasegmental Rep of Tone	Segmental, Level Tones only	[-seg] device for contour tone on V
3. Mapping from start of derivation Vacuity	Contour on V by ([-syll] Ibadan) Vacuity	Vacuity

The early mapping process in a language like Thai would not be based on the linguistic data, but on an assumption of universality; it serves to link a supposed universal underlying representation with the surface. With respect to Woo, it was not she but others who developed the [-syll] representation to allow her original claim about the lack of contour tones in underlying representation to be retained. Fromkin, focusing on the general problem of how to represent a contour tone on a short vowel, suggests

it is to be handled by a [-segmental] unit which she has argued is appropriate for Akan, but how well would that fit for Mende?

The following statement of Halle (1972:191) exemplifies the attitude that underlies the syndrome:

Observe that, if the theoretical framework requires us to represent non-stationary tones by features such as 'rising', 'falling', etc., then the restriction on the appearance of these tones [that they supposedly cannot occur on short vowels] is just another curious fact. If on the other hand the framework does not contain features such as 'rising', 'falling', etc., then the only way to characterize non-stationary tones is as a sequence of stationary tones; i.e., 'rising would then be characterizable as a sequence of low pitch + high pitch, 'falling' as high pitch + low pitch, etc."

In other words, it is a question of either-or, either the universal framework allows non-stationary tones or it allows only stationary tones, and if it allows non-stationary tones, it must require non-stationary tones.

Goldsmith escapes the syndrome of assumption of a universal representation of tone, at least in his latest article where he states:

...it is only an accident about English that the laryngeal pitch features are excluded from the great slicing.² Other languages may well include pitch as a part of the signal which is sliced up into successive segments...Whether a particular channel of articulation is included cannot be specified universally once and for all.

Still some of his earlier descriptions may exhibit the tendency discussed above³ or at least the methodological approach of trying to extend a means of representation needed to describe phenomena in one language to other languages, to see if it uncovers new things. We endorse this approach; however, where it merely uncovers a rule in the language which is assumed necessary to get from the proposed universal underlying representation X to the surface Y, it may not be fruitful.

Goldsmith in a series of publications (1974, 1975a,b,1976) has developed "Autosegmental Theory", which he has employed to describe mainly tone, but also some other features. The essential element of this theory as it applies to tone is that it provides for an independent level where pitch melody is represented. In this sense it has a 'suprasegmental' representation of tone. Yet it differs from Leben's suprasegmental representation in that the tone levels are not mapped onto the segments, but rather associated with the segments, and that the autosegmental level, on which pitch is represented, remains independent and continues to exist. A primary kind of evidence for the autosegmental representation of tone is the stability of tonal melodies. This is a common phenomenon in African tone languages. Goldsmith illustrates this with an example from Lovins (1971) in Lomongo. Here elision takes place at word boundaries within phonological phrases: bálóngó bákáé → bálóngákáé 'his book' (1975a:138). Goldsmith points out that the tonal melody remains stable when any type of process results in the modification of syllabic structure, e.g., vowel

deletion, glide formation, epenthesis.

The retention of tonal melody has been handled by the use of a Tone-copying rule. Goldsmith points out that such tone copy rules would only have to operate where a modification of syllable structure occurs, and he argues that this would involve either a global look-ahead rule, to copy a vowel which is later to be deleted, or a global look-back rule, if the tone copy rule were ordered after vowel deletion. Since, however, this stability exists also when other types of modification of syllable structure occur, one would lose a generalization if they were not treated as a unified phenomenon. One might handle this by a general derivational constraint on the output of any rule modifying syllable structure; indeed, in the past these have been referred to as 'melodic conspiracies'. Yet, Goldsmith argues, this would still not account for the interesting fact that when vowel assimilation rules are found in a language with tone stability, all features may be copied with the exception of tone features. Goldsmith shows that all these phenomena would be treated in a unified manner by the use of an autosegmental representation of tone.

In the Autosegmental approach there are two tiers. The tone melody tier is segmented into level tones; for example, rising and falling would be represented L H L. These level tones are associated with the syllabic elements in the other tier. Goldsmith's (1974) attempt at an autosegmental topology of tone is illustrative of his approach. Goldsmith classifies languages on the basis of several criteria:

- A. The tone information which must be included in the lexicon
 1. Nothing (English, German, Tokyo Japanese)
 2. Limited number of tonal melodies, and lexicon marks which one (Mende, Norwegian)
 3. The tonal melody is completely specified in the lexicon (Igbo)
- B. How does the melody get realized?
 1. Is the language accentual? a. Yes b. No
 2. From where does the tone melody spread?
 - a. word boundary
 - b. accent

In addition, if the language spreads from the word boundary, it can go leftward or rightward.

Goldsmith classifies a language as accentual if "...it distinguishes one of its syllables as perceptually prominent." (1974:172) This abstract marker -- accent, which Goldsmith represents by the asterisk*, can be specified in the lexicon or rule-inserted. English is classified as an accentual language whose tonal melody spreads from the accent. The tonal melody need not be specified in the lexicon since it is the same for all words: M H L. Since in English the tone melody spreads from the accent, the starred tone of the one tier 'hooks up' with the starred syllabic of the other tier. The M spreads to the left and L spreads to the right.

a r c h i p é l a g o
 M H L

a r c h i p é l a g o
 M H L

The tone hook-up is subject to the following well-formedness conditions:

- "(1) All tones must be associated with at least one syllabic element in the other tier; Conversely all syllabic elements in the upper tier must be associated with at least one tone in the tone tier.
(2) No association lines may cross." (1975a:141)

Mende is classified as a language in which a limited number of tonal melodies must be included in the lexicon; it is non-accentual and the tone melody spreads rightward from the word boundary. So the morpheme nyaha, which belongs in the class with the tonal melody LHL, will hook up from the left boundary and the process will be completed according to the well-formedness condition.

n y a h a

L H L

n y a h a

L H L

Tokyo Japanese is classified as an accentual language whose tonal melody spreads rightward from the word boundary. Its tonal melody is L \hat{H} L.

ka mi so ri ga

ka mi so ri ga ka mi so ri ga ka mi so ri ga

L \hat{H} L

L \hat{H} L

L \hat{H} L

It is hooked up starting from the boundary. The H is hooked up to the second syllable and to each succeeding syllable up to and including the syllable with the accent; the final L is associated with all the post-accentual syllables. Now consider the forms below, also presented by Goldsmith:

i no ti

i no ti

i no ti

a ta ma

a ta ma

a ta ma

L \hat{H} L

L \hat{H} L

L \hat{H} L

L \hat{H}


To account for forms like these Goldsmith states: "We must add a further rule after tone association to derive the correct Tokyo melodies: all contour tones (Rising=LH and Falling=HL) are simplified to H. It hardly needs to be said that these are among the most common tone rules in creation." (1974:177) Tokyo Japanese has often been described as a terrace tone language, in which all that must be marked in the lexicon is where the tone break is located. It is so called because all the syllables up to the tone break (which comes after Goldsmith's accented syllable) are on a high level except for the initial syllable which is low (unless it bears the accent) and all post-accentual syllables are low. We want to raise the question of the reality of the rules which change LH \rightarrow H and HL \rightarrow H. Are they to be thought of as phonetically conditioned rules, as Goldsmith's sentence might imply. If so, the first would seem to have a perceptual motivation in that a low tone is more difficult to perceive as such in position before a high tone (cf. Hombert (1975), Becker (1977a)), yet I fail to see a motivation for the second. In addition, I fail to find substantiation for their extreme commonness in

Hyman and Schuh (1974). Are these rules to be thought of as the result of a historical process? Or are they merely an artifact of this analysis, and primarily the result of attempt to extend a particular framework onto language other than those upon which the approach was originally motivated?

The first question that must be raised about the autosegmental representation is the presumed lack of stability in pitch melody in some languages. It is clear that Goldsmith recognizes the existence of such cases: "...the normal, 'unmarked' case is where the tone melody survives the effects of phonological rules." (1975a:135). Whatever the basis is, that Goldsmith uses to determine that stability is the unmarked case, one must ask how within his approach are the languages which exhibit stability distinguished from those that do not, formally. One might be led to suggest that languages which exhibit stability have an autosegmental representation of tone, while those which do not are organized differently, or as we will suggest later those levels on which is exhibited tonal stability have autosegmental tone, while those which do not are organized differently.

One must next raise the very serious question of the relationship of the MHL (1974) or HL (1975a,b,1976) tonal melody of English words to the very common, neutral statement intonation of the same shape. Is the MHL or HL on archipelago the tonal melody of this word or is it the neutral statement intonation which is mapped onto this word, when it constitutes the complete utterance? With respect to the claim that there is no tonal information in the lexicon in English, let us consider an example from Goldsmith (1975b). Here Goldsmith refers to these melodies of English as 'Intonational' and proposes that the intonational melody in disjunctive questions involving N choices is (LH\$) (HL) (\$ represents phrase boundary); this is claimed to result in the following tonal pattern for the disjunctive question:

Are you taking this seat, or that one?



Yet is not the pitch of the first syllable of taking higher than that of the second syllable? Doesn't a stressed syllable always carry higher pitch than an unstressed syllable when they occur in identical positions in a particular intonational melody. This might suggest that heightened pitch is one of the characteristics or features of stress itself, not only predicated on the tonal melody; the intonational melody would then be superimposed upon that of the word. When a single word constitutes the entire utterance, the heightened pitch of the stress cannot be distinguished from the heightened pitch associated with the H within the autosegmental melody (MHL) which is in this case associated with the only stressed syllable. Lea (1973) has found: "In general, however, it is apparent that the superimposed effects of sentence intonation, constituent structure, stress, and phonetic context give an encouragingly accurate account of the structure of F_0 contours." (1973:31)

We thus assume that English makes two uses of tone: one at the word level, as an element of the psychological entity accent or stress, serving a word-distinguishing function, and a second at the utterance level, which

is normally referred to as intonation. Assuming the level of intonation which Goldsmith has described as the autosegmental level of English with tonal melody MHL or HL (we feel the former more accurately corresponds to the facts in American English) is in fact autosegmentally represented, and it is a level which exhibits stability, e.g., not changed by loss of a vowel in fast speech, I see two possibilities. Either English has two autosegmental levels (one of which is superimposed upon the other) or the level of stress function of heightened pitch is not autosegmental.⁴ We will assume, as a working hypothesis that each language has only one autosegmental level of tone; this is also Goldsmith's position (personal communication). Now we may think of what Goldsmith has proposed as the autosegmental level of English as a formalization of what has traditionally been referred to as intonation. Let us now consider the suggestion of Bolinger (1963), "Intonation as a Universal." He brings forth data from many diverse languages that there is some contrastive use of tone at the utterance level in each, and further that there may be common universal patterns, e.g., 'running-down' pattern for declarative sentences or some kind of high pattern for questions. Though one cannot consider universality in the first aspect, let alone the second, as proven, this is still a very interesting hypothesis. It may be useful to bear in mind that not all systems of intonation (contrastive use of pitch at the utterance level) may be of the kind found in English or as developed (in terms of number of contrasting patterns or function load) as the one in English; the contrast need not be between a set of melodies, but may involve terminal transitions or merely changing the overall pitch level of an utterance.

Assuming as a working hypothesis only one autosegmental tonal level per language, were one to find that a language had an intonational system like English, and assuming that such a system should be represented autosegmentally, one might suggest that the other use of tone in that language was not autosegmental. As Bolinger notes, Abe (1961) has shown that the Japanese intonational system is remarkably similar to English. This similarity goes beyond statement -- falling, question -- rising, but even in the nuances in different types of questions. The conclusion based on this reasoning (granted that it is also based on some assumptions that everyone might not be willing to accept) is that Japanese does not have autosegmental word level tone. Our previous questioning of the value of the autosegmental analysis of Japanese, that the only new 'fact' it uncovers is that Japanese must have a rule HL, LH → H to match assumed underlying with observed surface, points in the same direction.

Reviewing, Goldsmith does not claim that the autosegmental representation of tone is universal. We would like to suggest that only languages or levels in languages which exhibit stability are to be represented autosegmentally. This is the only phenomenon which will cause speakers to separate out⁵ or in Goldsmith's terms to retain an autosegmental tonal level from the 'Great Slicing'. For Mende or Igbo the autosegmental level will serve a word-distinguishing or form-distinguishing function. For English, and Japanese, this autosegmental level may perform an intonational-attitudinal function, at the phrase or utterance level. One important point which we wish to make is that tone can have more than one function in a single language; for example, English or Japanese where it helps distinguish words and also functions in intonation. In this we differ from Goldsmith; he treated what we consider to be 'intonation' as

the only function of tone in English, and in Japanese the function of tone was to be at the word-level.

We think that the hypothesis about a language having only one autosegmental level of tone is an interesting one, especially when one compares it with the hypothesis of Bolinger of "Intonation as a Universal." The first hypothesis would seem to clash⁶ with the second, given that some languages like Mende or Igbo have an autosegmental representation of tone at the word-level; the first would claim that these languages could not have intonation at least in the sense that we know in English, i.e. with contrastive tonal melodies. Thus an examination of how these languages fulfill the functions that intonation does in English would seem indicated. We would predict that these languages would not use contrastive tonal melodies to express these functions; they might either not use tone at all here and possibly fulfill these functions morphemically, or they might use tone in the form of terminal transitions or overall tone levels, e.g., the raising of the word-level tonal pattern through a question. Intuitively, it would not be surprising if, as we predict, there was a relationship between the manner of use of tone at the word-level and the manner of use of tone at the phrase or utterance level.

Goldsmith's work has provided a means of representation and formalism for describing tonal phenomena in certain languages, like Igbo and Mende, which exhibit 'stability'. He has also avoided the syndrome described above, and among generative treatments of contour tones was perhaps the first to explicitly deny that all tonal phenomena need to be represented in a single universal manner. He also has proposed a formalism to describe what has been referred to as 'intonation'. Other formal means of representation of intonation have been proposed by others, and in order to decide between them we must consider and compare what new things about language they each uncover and which means is most enlightening for which language. We also wish to emphasize the importance of Goldsmith's Autosegmental Theory for the description of other, non-tonal, aspects which potentially may be represented on autosegmental levels; Goldsmith has provided examples of these.⁷

Once the assumption of a single universal method for the representation of contour tones is abandoned, it is possible again to consider how traditional typological distinctions between languages on the basis of how they use tone may correspond to basic organizational differences which are reflected in different means of representation of tone. A system of features like Wang's may be most appropriate for describing the use of tone (at the word-distinguishing level) in Thai or Vietnamese. These have been referred to as 'pure' tone languages, and there may be no reason to consider their use of tone as anything but segmental (or possibly a feature of a syllable). Woo's method of representation of contour tones would seem most appropriate for the description of accent languages which are mora-times. (Cf. Kiparsky (1973), Becker (1977b)) Leben's suprasegmental representation may be most appropriate to represent a language with tonal melodies which does not exhibit 'stability', if such languages exist; possible candidates for this type of representation might include some Scandinavian languages. Tonal systems and levels organized differently from these and those systems and levels which do not exhibit 'stability', which it seems most appropriate to represent with an autosegmental tonal level, may well utilize still other means of representation of tone.

In this paper we have presented several proposed means of representation of contour tones, and we have attempted to show why the search for a universal means of representation of tone⁸ is futile. We have illustrated a syndrome to which researchers who assume universals to exist at specific levels may succumb. We also examined the autosegmental representation of tone proposed by Goldsmith in some detail. We suggested that the only criterion which we linguists should and presumably language-learners would use to determine that a tonal level was autosegmental was 'stability'. Goldsmith had stated that not every language had autosegmental representation of tone. After pointing out that in at least some languages tone has more than one function, we made the hypothesis that in a single language only one level of tone could be autosegmental. Given that different languages utilize tone differently in order to distinguish words or smaller linguistic units and assuming that they therefore represent tones in different manners, one of which is autosegmentally, and presuming that different languages have different ways of expressing 'attitude' (or whatever we express by intonation in English) at the phrase or utterance level, often, perhaps always, involving tone, and that one of these ways reflects an autosegmental representation of tone, we make the substantive claim that no language will represent tone autosegmentally in both these functions, i.e. at both these levels. Verification of this prediction or invalidation of this claim remains for further research.

Footnotes

1. We do have some reservations about this analysis as a whole, in particular connected with the abstraction of positing a synchronic laryngeal.
2. The great slicing refers to a process of language acquisition whereby a series of activities of different articulators (or commands to different articulators) are supposed by Goldsmith to be sliced "...vertically into columns, assigning the appropriate feature specification to each column, ultimately deriving a representation like..." (1976:24) the feature matrices in Sound Pattern of English. Goldsmith (personal communication) suggests there is a tendency to **segment** completely because it is psychologically easier to remember a series of segments each possessing a series of features specifications and their linear order, than to remember for a series of features a series of specifications each of which is changing in time. This may well be true. However, we reject the implicit assumption that segments are defined exclusively in terms of articulatory features.
3. Consider the universal tone of the following statement: "One fundamental idea we must adopt is one that is shared by most suprasegmental theories: that the pitch melody of a word or phrase constitutes an independent linguistic level." (1974:172)
4. The possibility that the increased pitch (due to increased rate of vocal fold vibration) of the stressed syllable is merely the coincident result of the increased pulmonic pressure which some have claimed to be the distinctive feature of stress must be questioned. We would subscribe to Zemlin's hypothesis: "An increase in subglottal pressure, with laryngeal tension held constant, will produce a negligible rise

- in pitch. In addition, pitch changes are mediated primarily through modification in glottic tension and mass." (1968:190) We do, however, recognize the possibility that different languages may be characterized by mechanisms that differ to some extent.
5. Bolinger quotes Garvin (1955): "The first genuine speech experiences consist in the child's response to...the 'melody'...These responses occur at an early age (4-5 months or before)..." This suggests that children may learn these melodies before and independent of other aspects of speech.
 6. It does not necessarily 'clash' since Bolinger is working with a definition of intonation which includes any contrastive use of tone at the phrase or utterance level to express attitude. Thus both our hypothesis and his could be correct if languages like Igbo and Mende with supposed autosegmental representation of tone at the word level used tone, but not contrastive tonal melodies, to express 'attitude', i.e. used something like terminal transitions or a general raising of all tone levels throughout a question.
 7. For example, in Goldsmith (1976) the autosegmental treatment of nasalization in Guarani is presented.
 8. It is our opinion that this is not only true for contour tones, but also for the various levels of tones. We believe that even a weaker universal hypothesis that tone or pitch is a single parameter which can be divided up in different ways by different languages is not necessarily adequate. (Cf. Becker (1977b))

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SOME ASPECTS OF CODE-MIXING IN THAI*

Pairat Warie

0.0. INTRODUCTION. In this paper I propose to study one manifestation of multilingualism in Thailand, namely code-mixing and code-switching². A brief sociolinguistic profile of Thailand with special reference to multilingualism will serve as a starting point.

0.1. Ethnic groups and language identity in Thailand:

In Thailand there are three major ethnic groups, each of which retains to a certain extent its own language and culture. Of approximately 40 million people in Thailand, about 82% are Thai, 15% Chinese, and 3% Malays.³

The Chinese and Malays use their respective languages at home and in the neighborhoods where they form a majority. But outside this area they use the Central or 'Bangkok' Thai dialect. This dialect is the official language of the country, and it is the medium of instruction in schools and universities. Bangkok Thai is considered to be a 'superposed variety'⁴; it is not the primary native variety for the speakers but may be learned in addition to their native language.

Since the sixteenth century Chinese immigrants in Thailand have primarily been businessmen.⁵ They benefited the Thai court and the Thai people in trade and commerce. Thus they became the King's favorites (Jiang 1966:47). The Chinese were able to secure privileged positions, for example as tax-collectors, until the awakening of Thai Nationalism in 1914.⁶ The Chinese were attacked by intellectuals educated in the West, because all the major businesses and industries were in Chinese hands. They were accused of resisting assimilation with the native Thai people, the reason being, as Jiang (1966:56) puts it, "their racial loyalty and sense of superiority." Therefore, "they remained always Chinese."

During the last two decades the Chinese have lost their privileged positions. Despite its resistance, the Chinese community has been slowly absorbed into the larger Thai society. A great number of Chinese have married Thai women, "Their children, though they preserved their Chinese cultural heritage, such as ancestral worship, soon became indistinguishable in outward appearance from the Siamese." (Jiang 1966:49) They nevertheless remain aware of their identity: the second-generation Chinese call themselves lûuk-ciin, 'Chinese offsprings'.

Unlike the Chinese, the Malays have scarcely been assimilated at all into Thai society. This is due both to their ethnic identity and their religion. They live predominantly in the southernmost part of the country.⁷ Their language is Malay and their religion is Moslem. The Malays of Thailand associate themselves with the Malays in Malaysia, since they feel that they have a great deal in common, lin-

guistically and ethnically.

In addition to these two non-Thai ethnic groups, there are several other minorities in different regions of Thailand, such as Khmers or Cambodians, and Loas. The Khmers live in the Northeastern part of the country.⁸ With the Thais they share religion, customs and manners. The Khmers, in spite being taught Thai in school, have retained their language. However, in the early phases of Thai history, the Thais were in very close contact with the Khmers. They defeated the Khmers and adopted their superior culture and their Sanskritized language. Massive Khmer borrowings in the Thai administration and the "royal vocabulary" were recorded as early as 1431 A.D.⁹

On the other hand, the Loas-Thais, who share the Northeastern region of Thailand with the Khmers, consider themselves to be either Isarn, 'northeast', or non-Thai.

Two other languages, Sanskrit and Pāli, should be mentioned, because the Thai language has been heavily influenced by these Indian languages and their writing systems. According to Gedney (1947) and Scovel (1970), the Thai of average education believes that Thai derives historically from Sanskrit or Pāli because of the predominance of Indic loanwords in Modern Thai.

These ethnic groups in Thailand provide some clues to the reasons for language identity and language attitudes in Thailand.

0.2. Languages and dialects in the Thai sociolinguistic context: In functional terms we find the following linguistic behavior in Thai society and education. As mentioned in section 0.1., it is hard to pinpoint which language speakers will use. The social situation determines the choice of language. Although in all regions of Thailand speakers usually resort to Bangkok Thai when they encounter strangers, they will eventually find out which language is appropriate—Chinese, Loas, Malay, or English— and make the switch.

1.0. THE TERMS CODE-SWITCHING AND CODE-MIXING. Recent studies in sociolinguistics (Blom and Gumperz 1972; Kachru 1975; Sridhar 1976) have shown that Code-Mixing (hereafter CM) and Code-Switching (hereafter CS) refer to two distinct phenomena.

CS is "a shift between two distinct entities, which are never mixed" (Blom and Gumperz 1972:411).¹⁰ Timm (1975:476) in a study of CS of Spanish and English also notes: "Mexican-American bilinguals may converse in either language or switch back and forth between the two, spinning a variegated tapestry of bilingual talk as topics and moods shift, and as speakers' stylistic embellishments add further to the interweaving of the two languages."

However, it seems questionable whether within such a 'variegated tapestry' there would be no mixing of the two languages. Although the terms 'shift' or 'switch' that Timm uses

imply that the words of the languages in question are never mixed, it appears that those examples of switching within complex verb constructions like 'he was cachado [~caught], he was vachando [~watching]' are indeed instances of mixing, not switching. Code-mixing is not restricted to lexical items, it rather ranges from single items and inflections through phrases, clauses and whole sentences.

The concept of CM refers to "the use of one or more languages for consistent transfer of linguistic units, from one language into another, and by such a language mixture developing a new restricted or not so restricted code of communication." (Kachru 1975:75)

By and large, in the multilingual situation in Thailand, both CS and CM are widespread. However, the mixed variety is in wider use, and it is mixture which is probably the main cause of language change. The study of this phenomenon will therefore be useful to the understanding of linguistic change. The study of CM has various implications for linguistic theory as well. According to Annamalai (1971:26), "the study of the interaction of the lexical items of one language on the other [CM in Kachru's sense] would throw light on the organization and mechanism of the grammar and open new avenues of research on bilingualism."

2.0. TYPES OF CODE-MIXED LANGUAGES IN THAILAND. As mentioned earlier, the Thai people code-mix in several languages in their daily liyys. There are code-mixed varieties of Sanskrit-Thai, Pāli-Thai, Chinese-Thai, Malay-Thai, Khmer-Thai and English-Thai.¹³ Each variety has its own history, and its own functions, whether educational, political or attitudinal. A brief discussion of each of these code-mixed varieties follows.

2.1. Sanskrit-Thai and Pāli-Thai: The Indic loanwords of Sanskrit and Pāli provenience have a long standing in the Thai language. They were introduced through the channels of learning and education, including that learning which served religion and administration. They have been used by professionals such as scholars, authors, court poets, and religious theologians. These groups were instrumental in introducing numerous Sanskrit and Pāli words into the Thai language. The courtscholars and poets helped a number of these terms to obtain a permanent position in the literary styles of these languages: through their writings these borrowings have become an important part of the Thai literary tradition. Among them are the names of dāvinities such as Visnu, Śiva, Uma, Buddha, Brahman. These Indic loans have been frozen,¹⁴ i.e. people no longer treat them as foreign lexical items. They have become Thai words by age.¹⁵ The following are commonly used examples of mixed words:

Sanskrit-Thai:

<u>Sanskrit</u>		<u>Thai</u>		<u>Thai</u>
<u>ācārya</u> 'teacher, professor'	+	<u>yai</u> 'big'	→	/aacaan-yai/ 'headmaster'
<u>ahāra</u> 'food, meal'	+	<u>chaaw</u> 'morning'	→	/aahaan-caaw/ 'breakfast'
<u>dravya</u> 'wealth'	+	<u>sin</u> 'property'	→	/sāpsin/ 'wealth, property'

Pāli-Thai:

<u>Pāli</u>		<u>Thai</u>		<u>Thai</u>
<u>gamaya</u> 'time'	+	<u>māy</u> 'new'	→	/samay-māy/ 'modern'
<u>ākāsa</u> 'sky, space'	+	<u>riin</u> 'hot'	→	/aakaat-riin/ 'hot weather'

2.2. Chinese-Thai: Chinese and Thai mingled culturally and linguistically. The range of this code-mixed variety stretches from the highly literary level to the colloquial. For instance, saxvik (the Chinese celebrations on a person's sixtieth birthday) is used in Thai as saxvit, with the same meaning. Most frequent are words for food and cookery, such as sian-cii 'the kidney of pork', nāmliap 'olive'; these often replace the Thai words tai-muu and mā?-kʰʉk respectively. Also Chinese kinship terms are commonly found. In addition, Chinese-Thai mixtures are widespread in Thai. For example:

<u>Chinese</u>		<u>Thai</u>		<u>Thai</u>
<u>kiaw</u> 'wonton'	+	<u>krɔɔp</u> 'crispy'	→	/kiaw-krɔɔp/ 'fried wonton'
<u>nāmliap</u> 'olive'	+	<u>lūuk</u> prefix	→	/lūuknāmliap/ 'olive for fruit'

2.3. Malay-Thai: There are many loanwords from Malay which pertain to the linguistic field of Islam. For example, hari-rayɔɔ 'celebrating day' is used for the day on which the Moslems celebrate after a month of fasting. The many mixed borrowings are exemplified by tɔʔ-khruu, from Malay datoh 'a head man or a learned man in Islamic culture' and Thai khruu 'teacher'; tɔʔ-khruu preserves both meanings, 'learned man' and 'teacher'.

2.4. Khmer-Thai: As mentioned in section 1, Thai borrowed a large number of Khmer words in the early Ayudhya period (1350-1787). The Khmer words are used in Thai in titles and administrative terminology, as well as in the language of the royal family. Khmer titles such as brahya 'ruler of state' and caw-brahya 'prince' are frequent. Many Khmer words blend with Thai morphemes, for example:

<u>Khmer</u>		<u>Thai</u>		<u>Thai</u>
<u>kler</u> 'friend'	+	<u>phian</u> 'friend'	→	/phianklea/ 'friend buddy'
<u>khɛa</u> 'the moon'	+	<u>duan</u> prefix mean- ing circularity	→	/duankhɛa/ 'the moon'
<u>sānral</u> 'happy'	+	<u>cay</u> 'heart'	→	/sāmraan-cay/ 'feel happy'

2.5. English-Thai. The English-Thai variety is of considerable interest: it has not only been in existence for at least a century but the CM of the two languages is an on-going, and productive process. CM with English has different functions in different situations. (See section 5.0)

In addition to the formal aspect of CM of Thai and English, the functional aspect needs analysis, in particular its relation to register, occupation, and the educational background of the speakers.

I will apply the framework of CM presented in Kachru 1975. I will restrict my analysis and the illustrations primarily to CM between Thai and English. In the final section (section 7.0) I will stress some of the important implications of CM for the linguistic structure of Thai and linguistic theory in general.

3.0. ENGLISH BORROWINGS IN THAI: HISTORICAL BACKGROUND.

Since lexical borrowing is, by definition, a prerequisite for CM, the history of linguistic contacts and of borrowing in Thai from English is of relevance.

The extensive borrowing of foreign lexemes is not a recent phenomenon in Thailand. As was discussed in sections 0.1. and 2.1., we have evidence of Indic borrowings since the beginnings of Thai history, particularly of loanwords from Sanskrit and Pāli. Apparently Thai, enriched with Indic loanwords, was adequate until trade began to develop in the thirteenth and fourteenth centuries, bringing with it new objects and foreign ideas. In that period, Chinese, Malay, and Khmer words were incorporated. But European contacts contributed most strongly to the enrichment of the language. English words were introduced into Thai through contacts with the British as early as 1612.¹⁶ However, it was not until 1828, in the reign of King Rama III (1825-1851) in the Bangkok era, that a group of American missionaries came to Bangkok, and the Thai people began to learn English.¹⁷

The influence of Western technology in the reign of King Rama IV (1851-1868) involved only the ruling class. The King tried to reform the military system for the purpose of defense, and had to depend greatly on Western nations. English has been a linguistic vehicle since that time. Hundreds of words were borrowed: captain, lord, boat, cannon, and so on.

During the reign of King Rama V (1868-1910), the process of modernization¹⁸ gained momentum in Thailand, embracing all spheres of life. The King initiated the system of annually granting scholarships to several hundred state scholars, including royal princes, who were sent to European schools. In those days, when foreign advisors flourished and the students who returned from Europe wanted to display their superior knowledge of things, Europeanisms, particularly English words and phrases, were imported wholesale, for example: police, brandy, and uniform. Some words fitted easily into the Thai phonological system; some words of more than one syllable

were nativized by popular etymology for ease of retention or pronunciation. For example, credential became kràdaan-càan: kràdaan and creden- are close in sound. Thai khàt-lǎk, adapted from catalogue, has nothing to do with the meaning of the base word: the Thai term means 'to copy'. There are words which correspond, in both sound and meaning: yuu-nay-fòm, roughly 'to be in-form', is used for English uniform.

Loan translations are also common. The following are typical calques. English ice is rendered by nám-khàt, a compound of nám 'water' and khàt 'solid'. Electricity becomes fayfáa, a compound of fay 'fire' and fáa 'sky'. Matches is expressed by máy-khít-fay, from máy 'stick', khít 'strike', and fay 'fire'.

The need for a lexicon of technological innovations has heightened the importance of English as a second language. Even though English is not spoken natively in Thailand, it has become an obligatory subject in secondary school, and of course, at the university level, it is needed as the language of communication with other countries. English occupies a place of prestige as the language of the elite, symbolizing power, knowledge, sophistication, and modernism.

At the present time, people who code-mix with English are no longer restricted to the upper classes; they are commonly found among university students, hotel employees, taxi-drivers, and bar-girls. Three factors are held responsible for this change in language use: the influence of technology; the impact of Western civilization; and the Vietnam War (1961-1975). The war brought American military personnel and many businessmen into Thailand and, with them, American culture, spreading with such media as songs and movies.

4.0. THE NATIVIZATION OF ENGLISH LEXEMS. A borrowed word undergoes (except in the case of crude foreignisms) a process of nativization. This presupposes, in the case under discussion, a sketch of the structure of Thai, with stress on those linguistic features which contribute to the nativization of English words.

The Thai language is tonal, uninflected and predominantly monosyllabic. Thai syllables consist of an initial consonant or consonant cluster, followed by a vowel and a final consonant. Each syllable carries one of five tones: mid, low, falling, high or rising. Thai words are uninflected, i.e., they do not have the varying grammatical endings found in English or the other Indo-European languages. The grammatical functions of the constituents in a sentence are shown by their position. The basic word order is SVO. (I have included a description of Thai phonology in Appendix A). The transcription follows Mary Haas's Thai-English Student's Dictionary. Some of the linguistic features of Thai relevant to the process of nativization will be illustrated in the following (4.1-4.2.)

4.1. Compound Nouns:²⁰ Usually, the modifier in a compound noun follows the head noun. For example,

<u>Head</u>		<u>Modifier</u>		<u>Compound</u>
<u>khāaw</u> 'news'	+	<u>līi</u> 'to be rumored'	→	<u>khāawlīi</u> 'a rumor'
<u>kham</u> 'word'	+	<u>nam</u> 'to lead'	→	<u>khamnam</u> 'preface'
<u>rōt</u> 'car, vehicle'	+	<u>fay</u> 'fire'	→	<u>rōtfay</u> 'train'

However, if a compound noun contains a prefix, such as khwaam, or kaan, which are nominalizing prefixes, then the head follows the prefix. There are very few prefixes in Thai. Examples:

<u>Prefix</u>		<u>Head</u>		<u>Compound</u>
<u>khwaam</u> , nominalizing prefix	+	<u>rāk</u> 'to love'	→	<u>khwaamrāk</u> 'love'
<u>kaan</u> prefix	+	<u>ċii-cċċ</u> 'explain'	→	<u>kaanċii-cċċ</u> 'explanation'

4.2. Syntax: The typical sentence contains subject, verb, and object, in that order, for example:
 dċċċ khian cōtmāy 'Daeng wrote a letter'.
 Daeng write letter

4.2.1. There are no articles in Thai, e.g., in the sentence above the word cōtmāy 'letter' does not have any article.

4.2.2²¹ Thai quantitative classifiers, termed 'unit classifiers', are used with a large number of concrete nouns of different meanings. For example, the classifier lēm is used with nouns like book, notebook, candle, needle, oxcart, knife, and sword. In Thai, the noun by itself does not include any notion of number; the word 'book' could be 'a book', as well as 'books'. The use of numerals such as one, two, three can help to indicate the number. The construction thus is:
 NP + number + unit classifier. For example:

<u>NP</u>	<u>number</u>	<u>unit classifier</u>	
<u>nānsii</u>	<u>nīy</u>	<u>lēm</u>	'one book'
book	one	cl.	
<u>nānsii</u>	<u>hāa</u>	<u>lēm</u>	'five books'
book	five	cl.	

4.2.3. The noun can be followed by quantifiers, possessives or modifiers. For example:
 rooyphā-yaa-baan yāy sāam hāxynii 'These three big hospitals'
 hospital big three cl. this
 naa-lī-kaa khċċċ cān 'my watch'
 watch of I

4.2.4. Thai verbs have no inflections. If unmarked by context or time adverbials, they may be ambiguous. For example:
 khāw phċut pōt 'he lies'.
 he say lie

This verb can refer, according to context, to the past, present, or future. Thus, with no change of the verb phūt:

khaw phūt pòt pràcam tòn dèk
he say lie always when young
'He always lied when he was a child.'

khaw phūt pòt sàm ǎǎ 'He always lies.'
he say lie always

khaw cà? phūt pòt mǎa khaw maa khiǎn nǐi
he will say lie when he come to-night
'He will lie when he comes to-night.'

5.0. FORMAL CHARACTERISTICS OF CODE-MIXING. In Thailand the use of English, with its prestigious role in education, has traditionally resulted in a considerable amount of CS and CM (cf. section 3.0.). The contemporary situation has seen the expansion of the phenomenon into wider areas of professional life. CS and CM are particularly noticeable where English is used most, in government, law, banking, sports, and business. The following description of a football match exemplifies the use of CS in the register of sports reporting:

'The Thai Post League vs the Northern: mǎa rǎm lén Thai Post League pen fǎay control bòn dǎy dii thǎy kǎy nǎa lǎx kǎy lǎy cǎy tham hǎy Thai Post khum keem dǎy pen sǎn yǎy...'
(The Free People Newspaper, Sept. 1976, p.16)

The English rendering runs somewhat as follows: 'Starting with the Thai Post, who got the ball, they controlled the ball very well, both the line and the backfields did a good job, so the Thai Post could control and dominate the games...'

The word control alternated with the synonymous Thai word, khum. The reporter used them without mixing.

In Code-Mixing, however, as Kachru observes, "a linguistic code developed in this manner then develop a formal cohesion and functional expectancy. In such a situation one language functions as an absorbing language since the 'mixed' items are generally assimilated into its system."

I shall first discuss the formal characteristics of code-mixed Thai, then in section 6.0., the functional aspects.

The following are some of the more productive processes used in CM between Thai and English (5.1-5.4.):

5.1. Unit Insertion: There are several English words for which there are no direct equivalents in Thai but with which Thai speakers are familiar. For example, footnote, poster, goodnight, fan, work, care, mind, T.V., beer, nightclub.

In the CM process, given the structure of Thai, the English words which are borrowed are adapted to that structure. Two categories evolve: NP insertion and VP insertion.

5.1.1 NP Insertion: For the possessive construction, Thai uses preposition+ NP.²² For example, the equivalent of John's book is nāngsǐi khǎw book of John

This structure also applies to what are in English possessive adjectives. For example:

khun mǎi khǎw cǎn 'my mother'
honorific mother of I

English loanwords are used accordingly:

- 1) khǎw kǎw lǎw phim lǎw? mii fút nǔot khǎw bǎw kǎw duay
he then publish and have footnote of editor also
'He then published and had the editor's footnote.'
(The Nation, 9/4/75)
- 2) pǎostǎa khǎw sūn nǎksǎksǎa thǔuk thamlaay
posters of center student were torn
'The student center's posters were torn.'
(Thai News, 9/2/76)
- 3) bǔtlǎw khǎw khǎw cǎksǎpia pen thǐi nǐyom mǎak
plays of Shakespeare are popular very
'Shakespeare's plays are very popular.'

NPs which are borrowed are also used with Thai classifiers. Since the classifiers relate semantically to the semantic features of the nouns they represent, the English loanwords are given the classifiers of the closest Thai equivalents. For example:

- 4) a. T.V. nǐi khǎw one T.V. set
T.V. one cl.
b. bǐa sǎam khǎw three beer
beer three cl.
c. nǎw-khlǎp hǎa khǎw five nightclubs
nightclub five cl.

5.1.2. VP Insertion: English verbs are usually used as if they were Thai verbs, i.e., they are used without inflection. The following patterns are frequent in Thai:

- 5) bǎw-rǐ-sǎt nǐi kaarantii naa-lǐ-kaa thǐi thǎn sǐi thǔk rǎan
company this guarantee watch that you buy every cl.
'This company guarantees every watch that you buy.'

In negative constructions, the English loanwords are used with the Thai element mǎy which means 'not'. For example:

- 6) phǔu-yǐi dǎaw nǐi kǎn khǎw mǎy khǎw any thing
girls nowadays smart they not care about anything
'Nowadays girls are too smart to care about anything.'
(Sakulthai, 10/14/75)
- 7) sǔut nǐi mǎy work
rule this not work
'This rule does not work.'

- 8) thàa thəəməy maay ʔan cà? tham hây
 if you not mind I will do for you
 'If you do not mind, I will do it for you.'

5.2. Unit Hybridization: This term refers to the use of CM either as a syntactic unit, say, a NP, a VP or a compound noun. Consider for example,

- 9) kaa-tuun-àrun yuu nàa sîi
 cartoon morning is page four
 'The morning cartoon is on page four.'
- 10) mîa waan khon sîi phuaŋrîit yă?yă?
 yesterday people buy wreath a lot
 'Yesterday, people bought a lot of wreaths.'

In (9), the compound kaa-tuun-àrun is made up of an English word cartoon and a Thai àrun 'morning'. The mixed words always conform to the Thai construction, i.e., Head NP + modifier (not vice versa). In (10), phuaŋ is used as a prefix meaning 'a lei of' as in 'a lei of flowers'. The prefix is attached to a head noun.

The process of unit hybridization has developed into a productive process in the mixing of English with Thai affixes. The prefixes, particularly the nominalizing prefixes khwaam, kaan, and caaw are the most widely used. (See also section 4.1.) The following mixed words of English and Thai are typical:

- 11) khwaam, Thai prefix, used as a nominalizing prefix, often to make abstract nouns.

<u>Prefix</u>		<u>English word</u>		<u>Thai compound noun</u>
<u>khwaam</u>	+	<u>stupid</u>	→	<u>khwaam-satiwpiit</u> 'stupidity'
<u>khwaam</u>	+	<u>idiot</u>	→	<u>khwaam-iidiat</u> 'idiocy'

- 12) kaan, another Thai nominalizing prefix.

<u>Prefix</u>		<u>English word</u>		<u>Thai compound noun</u>
<u>kaan</u>	+	<u>corruption</u>	→	<u>kaan-khŋ-rapcah</u> 'corruption'
<u>kaan</u>	+	<u>strike</u>	→	<u>kaansatray</u> 'strikes'

- 13) caaw, a nominalizing prefix to form ethnica, 'the people of'; this prefix applies only to English proper names.

<u>Prefix</u>		<u>English word</u>		<u>Thai compound noun</u>
<u>caaw</u>	+	<u>New York</u>	→	<u>caaw-niwyŋk</u> 'New Yorkers'
<u>caaw</u>	+	<u>Italy</u>	→	<u>caaw-i-taa-lîi</u> 'Italians'
<u>caaw</u>	+	<u>Chicago</u>	→	<u>caaw-çî-khaa-kôo</u> 'Chicagoans'
<u>caaw</u>	+	<u>Europe</u>	→	<u>caaw-yuu-roop</u> 'Europeans'

Concerning these formations, one might ask questions such as: How are these formations different from 'normal' compounds? Why do we call them 'code-mixed'? They seem to be different from non-mixed compounds in two respects: First, they are composed of elements from two languages, English and Thai. Second,

they follow only the Thai structure, where the head NP precedes the modifier. Only when the Thai element is a prefix do they follow the construction in (10), (11), (12), and (13) above.

In other words, no matter what the origins of the borrowed lexemes are—Sanskrit, Pāli, or English—if they are mixed with Thai elements and become compounds, these compounds conform to the structural patterns of the Thai language: their order is such that the head NPs precede the modifier. For example,

- 14) a. Thai head NP Modifier Compound
 ráan 'store' + grocery → ráankroosəɔ̌ rîi 'grocery-store'
 rian 'medal' + Olympics → rian-oo-limpik 'Olympic medals'
- b. English head NP Modifier Compound
 skate + namkhə́ə 'ice' → sákeetnamkhə́ə 'iceskate'
 stock + khāaw 'rice' → sátə́ə kkhāaw 'ricestock'

In (a), the modifiers are borrowed and are mixed with native heads. In (b), the borrowed elements are the heads, which blend with native modifiers.

However, in the case of a non-mixed or entirely foreign compound, the foreign order will be kept. For example, job-market, human-advancement, gravity model.

The same is also true of loanwords from Sanskrit and Pāli. Fasold (1968:288) provides the following examples and their explanation: "...the learned word phāttaakhaan 'restaurant' is formed from the Indic elements phātta 'food' and ʔaakhaan 'building' where the modifying element phātta precedes ʔaakhaan, the head. By contrast, the native word for restaurant, ráan-aa-hāan (ráan 'store', aa-hāan 'food'), occurs in the normal order, head followed by modifier." In his analysis Indic, like English, has a rule which will move the modifier to the front of the head NP, and the Thai language has no such rule. Moreover, he lists many examples of non-mixed loanwords which still obey their native rule.

5.3. Tone Assignment for English Loanwords: In section 4.0. it was mentioned that Thai is a tonal language and English is not. Therefore, tones must be assigned to every English loanword. For example, tent is pronounced tə́nt with a high tone, counter is pronounced khə́wtə́ə with a falling tone. The question why Thai speakers give certain tones, particularly the 'falling tone', to the last syllable is unanswerable. Many English polysyllables borrowed into Thai are given falling tones on the final syllable. I suggest the following rules: If the borrowed word has a (native English) mid tone²³ on the penultimate syllable, assign the last syllable falling tone. Compare the following words:

15) a. <u>English</u>	<u>Thai</u>
<u>Sanfrancisco</u>	<u>saanfraansiskoo</u>
<u>Fredersario</u>	<u>frétdəə saa-ri-oo</u>

b. <u>English</u>	<u>Thai</u>
<u>Frederico</u>	<u>frétdəə-ri-koo</u>
<u>Chicago</u>	<u>çi-khaa-koo</u>

In (a), the penultimate carries a high tone; a falling tone cannot be assigned to the last syllables of either words. In (b), since both words have mid tone on the penultimates, a falling tone can be assigned to the last syllables.

The assignment of tones to loanwords need further investigation within the overall context of tone occurrences both in Thai and in other tonal languages.

5.4. Deletion of the Inflectional Suffixes: Thai is an uninflected language. Therefore, when English words are adopted into Thai, their inflectional and derivational suffixes are deleted. For example:

- 16) khaw sáí khaaw sǒɔ́y lít 'He bought two litres of rice.'
 he buy rice two litres
- 17) hǒɔy kwaay síp fút 'The room is ten feet wide.'
 room wide ten foot

The examples indicate that Thai does not use any morphological plural markers in the loanwords.

In this section, various patterns of linguistic blending were discussed. Although CM of English is pervasive in Thai, it is not entirely free and unconstrained. There seem to be a number of constraints on mixing, both syntactically and semantically motivated. Much more detailed research is needed to reach definitive conclusions.

6.0. THE FUNCTION OF CODE-MIXING IN THAI. Code-Mixing of English in Thai is a role-dependent and function-dependent linguistic phenomenon. In terms of role, a speaker has to take into consideration his interlocutors when he wants to code-mix in English and Thai. For example, students may code-mix more easily when they talk to their friends than to their parents or to shopkeepers. The concept of 'the context of situation'²⁴ is, therefore, crucial. In terms of function, the CM variety has taken on specialized uses. As in the case of CM in India, one can explain it functionally with reference to role identification, register identification, and elucidation. (Kachru 1975)

6.1. Role-identification: At present, CM in Thai-based English is very common among the elite, the high socioeconomic group, and university students. English-Thai CM is a mark of modernization, a high level of education and sophistication.

Sometimes, the inclination toward it goes to the extreme, comparable to the situation in Karnataka described by Sridhar (1975:8): "...To code-mix in English is the next best thing to speaking English." University students use Thai-English CM very often. They have their own mixed words. For example, sentences (18) and (19) are often found in their conversations;

18) thāa thāa sǎw p tǒk thāa tǎi sǎm rǎi pǐit
if you fail you must exam or repeat
'If you fail, you must take a re-exam or repeat.'

19) thāa thāa dāy ēēf mǒt thāa cà? doon thāay
if you get F all you will be retire (or drop out)
'If you get all Fs, you will be dropped.'

6.2. Register-identification: As a sociolinguistic term, 'register' is "the name given to a variety of language distinguished according to use." (Halliday et al. 1964:87) It is a way of speaking that stands in a one-to-one relationship to a situation. By definition, if one register differs from another, so do the situation, and vice versa. It could be called an occupational linguistic variety as well. For example, a doctor may use highly technical language when he talks to his colleagues, but he uses the vernacular with his patients, and still another type of language with his family at home. Register, in short, refers to a functionally dependent style of speech.

In Thailand, a doctor will find that English comes to his rescue when he works in his office. Not only is English prestigious, it also has the added advantage of being "efficient". And, since the 'native words' for many technical and abstract subjects often derive from foreign language (such as Sanskrit and Pāli), the Thai speakers must use foreign words anyway. Often the English word is briefer and, therefore, preferred; for example,

20) <u>English</u>	<u>Thai</u>	<u>Pronounced</u>
<u>pathology</u>	<u>ayur-wej</u>	[aa-yū-rā-wēet]
<u>pediatrics</u>	<u>kumanweichasart</u>	[kū-maan-wēetcā-sàat]

Both Thai words in (20) are from Indic words; ayur-wej, from the Indic morphemes ayur 'age' and wej 'science'; the second from Indic kumara 'baby', wejh 'disease', and sastra 'science'. They are somewhat less efficient than their English counterparts.

Thai-English code-mixing is widespread also in such other areas as engineering, the sciences, and business.

6.3. For Elucidation: English plays a most important role in Thai education. It is a medium of instruction. In order to explain better or to disambiguate certain concepts or terms, teachers find Thai-English CM very helpful. A large

number of English terms are incorporated in printed texts. The following passage is typical:

"...khô³ khuan cam kiaw kàp income effect kô³ khi³ wâa man
pen buak sâ³ pay cên nay kô³-ra-ni³ kiaw kàp khô³ leew
inferior goods nân income effect àat pen lóp dâ³."

"...Things to remember about income effect is that it is not always positive, for example, in case of inferior goods, the income effect can be negative."

(Naksawad; The Theory of Micro-Economics. (in Thai) 1970:207)

Notice that the author used both inferior goods and its Thai equivalent, khoo pleew, for teaching purposes.

For certain concepts, e.g. in psychology, English words are often preferred to coined Thai words. Words such as skill and aptitude are more easily used and better understood by Thais than their Thai equivalents thākṣā and kḥwaam-čānna-phī-seet. This happens because the coined equivalents in Thai, while technically accurate, lack wide usage and hence are felt to be rather awkward and artificial.

7.0. THE LINGUISTIC IMPLICATIONS OF CODE-MIXING. I have presented a succinct description of some typical formal and functional aspects of CM in Thai. CM has been a powerful process in the language. Even few examples of my analysis reveal the important role of CM on all linguistic levels.

We may want to ask, what will become of English or Thai in Thailand? The precedent of the changes of Thai caused by CM with Sanskrit and Pāli is instructive. For example, such native words as duan -dian, hua, phuā, and mia, meaning 'moon', 'head', 'husband' and 'wife', respectively, are hardly ever found in the formal level of Thai. Instead, the corresponding Indic mixed items are frequent: duan + cantra 'moon', sri-sa 'head', sāamii 'husband', phariyaa 'wife'. Furthermore, the speaker's instinct excludes certain Thai words from the formal language. For example, it is considered vulgar to use an expression such as puat khii 'to feel a necessity to evacuate the bowels' when talking in polite society. But a mixed word of Thai and Pāli, puat ut-caa-ra, consisting of Thai puat 'to be in pain' and Pāli uccara 'feces' is permitted. Social customs, then, are one factor which will make some Thai words obsolete. Since there has been a wholesale borrowing of Indic words into Thai (cf. section 2.1.), the latter has in the course of time undergone an extensive process of assimilation and acculturation; the Indic words have become an integral part of the linguistic competence of a present-day Thai speaker, and, therefore, are analyzed in the synchronic grammar of Thai as part of native lexicon.

English mixing, when compared to Indic mixing, is only a recent phenomenon. Because of modern science and technology, English is involved in every walk of life, and the Thai people are exposed to English through television, movies, and songs. It is quite probable, then, that CM of Thai with Eng-

lish will have a considerable impact on the linguistic repertoires of the Thais. English terminology is increasingly replacing many native words of Thai, e.g., the word term itself is used instead of the Thai phaaakkaans-ksaa. English mixing serves for elucidation (section 6.3.), and as an efficient tool for speakers of many occupations.

8.0. THE RISE OF 'PURISM' IN THAILAND. Yet, the process of CM in Thai is not freely and generally accepted. There have been some attempts towards a purification of the Thai language, starting with the time of King Rama VI (1910-1925). Since English words were used in large numbers by those who returned from Europe (see section 3.0.), the King made a deliberate effort to eliminate these loanwords. The use of Pāli and Sanskrit in compounding was encouraged; they were more like native words fit to denote new objects. Thus, thoo-ra-lēek, a combination of thoo-ra, Pāli for 'distance', and lekha, Sanskrit 'writing or line', became a new word for telegraph. Today, however, with the rapid changes in technology, science, and civilization, this tide of 'purism' is receding. Speakers resort to English mixing more than ever (the reasons for this CM were indicated in sections 6.0. and 7.0.)

The feeling of loyalty toward native Thai is nevertheless present, as evidenced in various publications. Thus, Thonglor, in his Thai Grammar,²⁵ called the use of English mixing a 'flaw' and a 'corruption' of the language. The purists' attitude has been successful in certain milieus. English mixing is barred from official correspondence, the vocabulary of the royal court, and public speeches.

Since CM is the role-dependent, speakers have to be careful in choosing their lexical items. They avoid using mixed words when talking to people of higher status. Next to the status of the participants, age is most important. The elderly who do not understand English, do not like being addressed in the mixed language.

9.0. CONCLUSION. The aspects of Thai-English CM discussed in this paper concerned only certain facets of this linguistic phenomenon. This is the first approach to a study which will involve a substantially larger corpus of materials, partly of written data, partly of conversations reflecting the various types of interaction in Thailand.

This aspect of two languages in contact is of value both in terms of its theoretical implications for language change and for its applied implications with reference to language attitudes and educational considerations. Linguists have only marginally touched on this field and some very interesting observations on a bilingual or a multilingual use of CM have already been made. There is still a great need for cross-linguistic and cross-cultural studies in this field.

APPENDIX A

PHONOLOGY OF THAI: A Structure Description, based on Mary Haas's Thai-English Student's Dictionary (1964).

Consonants:

	Bilabial	Dental	Palatal	Velar	Glottal
Stops: voiced-unasp.	/b/	/d/		/g/	
voiceless-unasp.	/p/	/t/	/c/	/k/	/ʔ/
voiceless asp.	/ph/	/th/	/c/	/kh/	
Spirants: voiceless-unasp.	/f/	/s/			/h/
Sonorants: glides	/w/				
nasals	/m/	/n/			
laterals		/l/			
trill		/r/			

Vowels:

	Front	Central	Back
	(unrounded)		(rounded)
High:	/i/, /ii/, /ia/	/ɨ/, /ɨi/, /ia/	/u/, /uu/, /ua/
Mid:	/e/, /ee/	/ə/, /əə/	/o/, /oo/
Low:	/æ/, /ææ/	/a/, /aa/	/ɔ/, /ɔɔ/

Tones: middle tone (no marking), low tone (ˊ), falling tone (ˋ), high (ˊ), rising tone (ˊˊ)

FOOTNOTES

*An earlier version of this paper was presented at the American Oriental Society, Cornell University, Ithaca, New York, April, 1977.

I am grateful to Professors Braj Kachru, Yamuna Kachru, and Henry Kahane for their invaluable suggestions and comments. I would also like to thank Mr. S.M. Sridhar for his helpful comments.

¹For description and illustration of CM, see Kachru (1975), and section 1 and 5 of this paper.

²The definition of CS is given in section 1.

³The origin of the Thais is a puzzle. One theory claims that the Thais have Chinese origins; another, recently suggested by Paul Benedict, claims that the Thais are part of the Indonesian groups. For more detail, see Seidenfaden's 'The Thai Peoples' (1963). The population of Thailand as

established by the office of the Public Relations Attaché in 1974 amounts to 40 million.

⁴In Ferguson's sense.

⁵For more detail on Chinese in Thailand, see Jiang(1966: 39-65).

⁶Jiang (1966:55).

⁷To quote Standish (July, 1967:19) about the Malay-Thai: "...Thai suzerainty over these Malay states had only begun in 1832...The four provinces in the South are mainly Moslem. Of the 800,000 people in the area, perhaps 75% are officially called 'Thai Moslem or Thai Malays.'"

⁸Seidenfoden (1963:109)

⁹'Royal vocabulary' includes terms of reverence that must be used when speaking to or of royalty. For more detail see Michael Vickory (1974:158-173).

¹⁰The notion has also been extended to include the switching of dialects and or registers within a monolingual repertoire: cf. J.J. Gumperz and J.P.Blom (1972:407-434).

¹¹See L.A. Timm (1975:478).

¹²In this paper only Standard Bangkok Thai is used; it is the Central dialect. There are at least three additional major dialects: the Northern (or Chiangmai), the Northeastern (Isarn), and the Southern dialect.

¹³There exists also dialect mixing, such as between the Northern and the Standard dialects.

¹⁴By the term 'frozen' is meant that these words have been completely assimilated into the Thai language and people are not aware of their non-Thai (or Indic sources).

¹⁵Gonda (1973:25) also gave the same comment about Sanskrit in Indonesia: "...and we may, generally speaking, assume that the more popular loanwords become, the more they are treated as though they are natives."

¹⁶Anderson (1890 :50) recorded the first ship of England to Siam in his book. In his words: "...The factors were received in audience by the King on 17th September, when King James's letter was doubtless delivered. The arrival of a letter from so little known a monarch as the King of England was a great event in Siamese history, and one which gratified the King."

¹⁷From Vuthisathira (1964).

¹⁸To quote Vuthisathira (1964:80): "...From 1873, King Rama V had launched a serie of educational programs in which modern education was to be given...The immediate aim was to lay down the foundation for a higher education in the country. The next aim was to build up a new intellectual group to serve in a modern bureaucracy so that the East could meet the challenge of the West."

¹⁹For more example, see Rajadhon (1959).

²⁰See Mary R. Haas (1964).

²¹A unit classifier is any classifier which has a special relationship with one or more concrete nouns.

²²Nasica (1976) has grouped the Thai language with Cambodian and Javanese. These are SVO languages, and their genitive construction is Noun + genitive.

²³A mid tone or a level tone is unmarked in Thai.

²⁴I mean the Firthian concept of 'the context of situation'. See ²⁵examples and discussions in Langendoen (1968). Cf. Thonglor's 'The Thai Grammar' (1970:455).

*Data for the Present Study: Sources: The data have been collected from the following sources: 1) Government notification in the Thai Newspapers; 2) My personal observations; and 3) Thai magazines and short-stories.

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NOTES ON THE ORIGIN OF QUANTIFIER FLOATING

Richard Neil Halpern

The curious alternation exhibited by such sentential pairs as "All (of) the men left" and "The men all left" have been observed and insightfully discussed by such linguists as Postal (1974) and Maling (1976). However, the work thus far has focused on the proper formulation of a rule or rules of quantifier post-posing in a synchronic grammar and the elementary "why"-question stands untouched. That is, no one has attempted to account for the fact that such a rule or rules came about in the first place. In this paper, I would like to offer a diachronic hypothesis concerning the forces which may have "enabled" the quantifier to leave the substantive expression and situate itself elsewhere in the sentence. In effect, I will be trying to begin the explanation of why English has a phenomenon of quantifier shifting.

I should say that for the purposes of this study, I will limit the discussion to the particular quantifier all and to the particular sub-rule of the phenomenon which Maling labels Quantifier Floating, as contrasted with the rule which she terms Q-Pro Flip. And I must add at the outset that I am only offering an hypothesis, and further work will be required to fully determine its explanatory value. Still, I believe that I am taking a step in a worthy direction, and if it is a false one, time will tell.

I begin by turning to evidence which Maling adduces to show that her rule of Quantifier Floating is sensitive to semantic factors. Thus, note the following contrasts (cf. Maling, 1976, p. 716-717):

1. He considers his friends all (as) pompous.
2. *He impresses his friends all as pompous.
3. The vision struck the sheperds all blind.
4. *The vision struck the men all as a beautiful revelation.
5. Frank persuaded the men all to leave.
6. *Frank promised the men all to leave.
7. I saw the men all leave.
8. *I saw the men all yesterday.

And as Maling herself observes (Maling, 1976, p. 716): "There are some semantic as well as structural restrictions on what the following constituent can be (i.e., the constituent following the post-posed quantifier). While it is not obvious how to state the semantic restrictions precisely, it appears that Q-Floating can apply only if the following phrase can be reasonably associated (semantically) with the NP that the quantifier binds." Thus since Quantifier Floating is to some extent semantically conditioned, it is not implausible that its origins are also semantically tintured. I now propose to pursue a corresponding route.

First, observe that all can function in a purely adverbial capacity on a par with such universal adverbs as entirely, completely, and totally:

9. John and Bill are all (entirely, extremely) wet. (cf. "John and Bill are both all wet.")
10. I'm all (entirely) wrong.
11. I'm all (completely, to as great an extent as is possible) tired out.
12. Russell was all over (roughly speaking, "entirely encompassing") Chamberlain.
13. Love isn't all (entirely, totally) peaches and cream.
14. It's all (entirely, totally) dark outside.

In each of these cases, one is compelled to treat all as a universal adverb on a par with such entries as entirely, completely, and totally (cf. the non-equivalence exhibited by "I'm all wrong" and "All of me is wrong"), which, as is normally the case, modify predicates. Further, there is also diachronic evidence to support the claim that all can modify predicates. Consider, for example, such bona fide English words as already, altogether, and alright. And one obtains a cross-linguistic purview by looking at such English words of Latinate origin as omniscient, omniverous, and omnipotent. In each case, the Latin quantifier omnis has served to modify a predicate. For example, one who is omniscient knows everything or, in effect, knows as much as can be known. Thus, intuitively, omnis has served to extend the domain of the predicate as far as it can be extended. Yet, this notion of extending or quantifying a predicate is subtle and depends largely on the semantic quality of the predicate itself. Thus, one who is omniverous does not eat everything in the world per se but rather eats every kind of thing in the world. Again, one who is omnipotent is not usually thought to possess or have under his immediate control all of the power in the universe (as would be the case with God, were one to construe Him pantheistically) but rather possesses a capacity which is greater than that of all other conceivable entities and, to whatever extent it makes metaphysical sense, possesses as much power as one can possess. For example, however powerful Zeus may be, Prometheus is not without some share of the world's force or energy. In any case, the general point here is that in both English and Latin one finds a universal quantifier modifying a predicate. Moreover, we have just seen in the Latinate cases that the relationship between the quantificational adverb and the predicate in question may depend on the quality of the predicate, that is, one cannot assume beforehand what kind of hybrid will result when these two elements interact.

Now, consider the case of a simple physical object, a table perhaps. When one says that all of the table is red, he is saying that each point of the table's surface is red. In this case, the quantification is done with respect to the substantive. However, one can achieve the same semantic effect by modifying the predicate with a universal adverb such as entirely, totally, or our newly-found-adverbial-friend all. That is, when one says that the table is entirely red, or totally red, or all red, he is modifying the predicate and asserting that it holds to an absolute extent. And the preferred reading in such cases is the one in which the predicate is thought of in a spatial sense, such that for the predicate to hold in a complete or absolute fashion is for the predicate (really, the property) to hold at each point of the table: hence, the synonymy manifested between "All of the table is red" and "The table is all red". I should point out here that the possibility of alternate adverbial interpretations once again comes into play, and

one can also construe such sentences-as "The table is entirely red" as meaning that the table is as red or is as deep a shade of red as is possible, however strained such an interpretation might be. Yet, I believe that such a construal does not damage the point being made here. What concerns me is the fact that there are cases, presumably characterizable in a general sense, in which one has a natural semantic equivalence between a sentence in which the substantive expression is modified by a universal quantifier and that same sentence in which an adverbial element is modifying the predicate to a universal or absolute extent. In the present context, I will assume that this equivalence obtains for physical phenomena treated as single discrete entities and of which one is predicating a germane physical property. Again, observe the following sentential pairs: "All of the table is red" and "The table is all red"; "All of the sugar is gone" and "The sugar is all gone"; and "All of the bread is spoiled" and "The bread is all spoiled" (this last case is a subtle one and deserves further explication).

Thus, we are finally ready for my diachronic hypothesis. I claim that speakers were regularly using all as an adverb in sentences such as those mentioned above (e.g., "I'm all confused", "I'm all tired out", "I'm all satisfied"), that they perceived a synonymy between some such instances and sentences in which all was functioning as a full-fledged quantifier and were thus prone to use the elements of such sentential pairs interchangeably, and finally generalized the use of all in adverbial position and function to cases in which there was no natural adverbial gloss and for which the proper position of the quantifier was with the substantive expression. Thus, I am claiming that speakers were saying such things as "I'm all confused" and "The table is all red", that further, they were using sentences such as the latter interchangeably with sentences such as "All of the table is red", and that they extended this interchangeability to cases in which all could not naturally function as an adverb, that is, to cases in which all was not able to function on a par with such other bona fide adverbial elements as entirely, totally, and completely--hence the birth of sentences such as "The men all left" whose natural counterpart "All (of) the men left" is the critical link in the extension. To view the matter in a simple analogical form, "All of the table is red" is to "The table is all red" as "All of the men left" is to the ultimate product, "The men all left".

Now, to return to a point made earlier in this paper, examined under this diachronic light, the semantic constraint observed by Maling makes perfectly good sense. If the synchronically floated all earned its privilege on an analogy with a bona fide adverbial usage of all, it is not surprising that even today all can only float to an element of a sentence which is to some extent interpretable as being semantically associated with the original substantive expression. And as a capstone to this study, I wish to point out that the English term enough can modify both substantive expressions, as in "Mary brought enough food for everybody", and predicates, as in "John is tall enough to play center", and that the French tout receives both an ordinary quantificational and an adverbial gloss.

Still, before closing the discussion, I must speak to a powerful objection, pointed out to me by Jerry Morgan. Under my view, and in schematic terms, all began modifying substantive expressions (this much is confirmed by the Oxford English Dictionary) extended its domain to predicate expressions, functioning in an adverbial capacity, and then generalized this new domain by way of a semantico-syntactical analogy. It is this last stage which yields the synchronic rule of

Quantifier Floating. However, it is also possible that quantifier floating followed the more basic substantive usage and in turn provided the foundation for a reinterpretation in which the grammatically shifted all was construed as functioning in the semantic capacity of an adverb. According to this treatment, sentences such as "John and Bill are all wet" and "I'm all wrong" are the final stage in the development, as it is in these cases that all is simply and solely an adverb. Now, the unexplained leap in this second alternative involves the very matter which I have tried to explain here: the origin of Quantifier Floating. Thus, although the adverbial reinterpretation is perfectly plausible, it leaves one wondering about the initial source of puzzlement. Yet, with my approach there is also an unaccounted for leap. For although the rule of Quantifier Floating falls naturally from such an account, one is still left with the generalization of all's domain to ordinary predicates. That is, my view leaves one wondering why all should have generalized its domain from substantive expressions to predicative expressions.

However, one's inclination toward ambivalence notwithstanding, I think that there are reasons for preferring the approach advocated here. First, the semantic constraints on Quantifier Floating observed by Maling receive a natural account only under a perspective in which it is thought that Quantifier Floating was itself initially motivated on adverbial grounds. If Quantifier Floating has always been a purely grammatical phenomenon, one is forced to argue that the adverbial usage to which it apparently gave rise has in turn exerted a semantic influence upon its domain of operation. Doubtless, the solution proposed here handles Maling's data more naturally. Second, a view under which the adverbial usage arose from that found in Quantifier Floating leaves unexplained why this grammatical phenomenon should have taken as its target positions which can otherwise be occupied by adverbs (cf. "The men all left" and "I'm entirely wrong" with *"The men ate all a banana" and *"John finished completely the job"; i.e., at least in the general case, all can float to positions which can be occupied by adverbs and cannot float to positions which cannot be occupied by adverbs).¹ Yet, according to the view that Quantifier Floating is itself the result of the grammaticalization of a more basic adverbial usage, such a datum is a direct consequence of the position. Third, and as a tenuous addition to the evidence thus far presented, one can point to a general diachronic trend in English to generalize the domain of terms which quantify substantive expressions to include an adverbial function. For example, consider the following pairs: entire and entirely; complete and completely; total and totally; and whole and wholly. Of course, in these cases a specific adverbial marker has been employed, but the pattern is the same as that posited in this paper for all. Now, one may question why all did not become ally, when functioning in its adverbial capacity. But one can equally well ask why the French tout did not become toutement, when playing the role of an adverb. In any case, there is fuel for thought here, and it is not inconceivable that further study of these questions will yield an enrichment of our understanding of language universals. No one will deny that the notions of quantity and extent are at the very heart of our conceptual scheme.

Acknowledgments: I wish to thank Anthony Britti, Richard Cureton, Georgia Green, and Jerry Morgan for providing valuable advice, and if this paper is at all readable and accurate, these last two persons mentioned are largely responsible.

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Footnotes:

1. I must confess that I have not done a complete survey of the target of the rule of Quantifier Floating, however I believe that the claim that all can only float to positions which can otherwise be occupied by bona fide adverbs and can only float to such positions is borne out by Maling's (1976) data. Needless to say, further investigation would be required on this point, but for the purposes of this paper, I believe that the evidence is telling enough to offer up for inspection.

HOW REGISTERS REGISTER: A STUDY IN
THE LANGUAGE OF NEWS AND SPORTS*

William D. Wallace

The purpose of this paper is to examine some features of the language of American newspapers, how the registers of news and sports stories differ from one another with respect to them, and whether this variation is systematic, i.e. holds for more than one occurrence of the two registers. By determining how these two registers differ, I hope to show the kinds of variation that may occur among registers. If there is systematic variation, this would suggest that registers may be defined in terms of a complex of features including lexical items, collocations, stylistic devices, specific grammatical transformations, discourse structure, etc. Finally, we shall see the role registers play in defining the language of newspapers.

1. Registers

1.1. The basic concern of any sociolinguistic research is the people who use a language, the uses they have for that language, and how the language varies according to user and use. In a study of English, there are then several kinds of variation which need to be defined. Perhaps the best-recognized forms of social variation may be termed dialect, e.g. the features which differentiate Boston English from that of Plains, Ga. But the relation 'dialect' has its limitations--we would not want to set up the same relationship between Boston English and Indian English as we would between the languages of Boston and Plains, both of which share American English features. Therefore, we term such differences, i.e. English as it has developed in various contexts like America, England, India, and West Africa, varieties of English (Kachru 1966). We may then say that within the varieties of English, speakers participate in several dialects defined by their geographical location, age, sex, social status, etc.

A large part of dialectal variation is unconscious in that the speaker imitates the language of those who also participate in his social groupings. When we turn to uses of language, we must talk about the appropriateness of the forms and syntax for a given context, for a use of language implies a process of conscious selection from the verbal repertoire of the speech community. A specific use of a language is termed register.

The category of register is needed when we want to account for what people do with their language. When we observe language variety in various contexts, we feel differences in the types of language selected as appropriate to different types of situations.
(Halliday et al. 1964:87)

But as certain dialects form a variety of language, so do certain registers appear to be appropriate to a single context, e.g. news, society, and sports stories in newspapers. Such contextually defined uses are restricted languages, of which registers are a more delicate subcategory (Kachru 1966:262). Restricted languages are not speaker-defined, for all speakers of a language may use a register regardless of dialectal variation; registers and restricted languages are defined by the uses and contexts for which speakers find them appropriate.

1.2. Both dialects and registers form a continuum within a variety of a language in which two or more may overlap in various areas and to any extent. But some features seem to inhere to certain dialects and registers; therefore, just as a speaker of American English can usually recognize forms from the American southern dialects, so can he identify precedent, amicus curiae, and sentence (1) from the register of law.

(1) May the counsel for the defense approach the bench?

He recognizes these forms not necessarily as restricted to courts of law but as appropriate to that context. Thus, that case back in '49, the court's buddy, and (2)

(2) Hey judge, can we rap?

might convey the same meaning as those forms mentioned above, but they would be considered as out of place in courtrooms as discussions of traces, Chomsky adjunction, and the address system used in legal proceedings.

The user can also recognize register ambiguity--the precise meaning of a form may depend upon the context in which it appears.¹ For example, good taste in American English could be from the language of advertising, a discussion of etiquette, or the register of interior decorating. In isolation, it may be ambiguous. Also, parodies, such as news stories written in the language of sports commentaries, and humor based on mixing registers are evidence that registers are as identifiable as dialects (Halliday et al. 1964:88; Quirk 1968:175-76).

We can see there are various kinds of variation for which we need to account in registers, e.g. that determined by context (linguistics vs. courtrooms), style (precedent vs. that case back in '49), and selection (good taste).

1.3. Halliday et al. (1964:87-94) propose a three dimensional approach to registers according to the field of discourse, mode of discourse, and style of discourse. Fields of discourse are what I have termed here restricted languages, such as legalese, journalese, politics, and linguistics. Mode of discourse refers to the medium in which a language appears, particularly spoken versus written. These can be subclassified into groups, such as lectures, sermons, and television compared to novels, essays, and newspapers. Each of these varies in delicacy, that is, the language of fiction can be divided into various genres, newspapers into their component

story types. It is by this feature that we may differentiate a television news story from one appearing in a newspaper, though both fall within the field of journalese. Finally, the style of discourse is a continuum from which the participants choose the degree of formality appropriate to the situation; e.g. the five styles delimited by Joos (1962), frozen, formal, consultative, casual, and intimate.

The style of discourse is an important parameter for this discussion of newspaper registers, because not only will two restricted languages differ in formality, e.g. linguistics vs. advertising, but also two occurrences of a single register may differ in the style selected. On the one hand, the language used in a news story to describe a devastating earthquake will be more formal in style than one reporting the reception of a U.S. President on his arrival in a foreign capital. And on the other hand, two news stories reporting the same event may vary in style depending upon the newspaper or magazine in which they appear. The New York Times may be considerably more formal in all its writing than The New York Daily News.

Within this characterization of registers, there are certain relations that cannot be accounted for. Specifically I mean: what features do we recognize as creating a similarity between the languages of advertising and propaganda? Also, certain sports stories will be found to be as formal in style as most news stories, although sports registers are generally less formal than any other in journalese. I suggest that the distinction needed here is the function of discourse.² The function of persuasion would relate advertising and propaganda; matter-of-fact communication versus popular explanation will interrelate various news and sports stories. This feature goes hand-in-hand with style, but the two are not always dependent. Advertising is a less formal register than propaganda; two newspapers will both report in the role of matter-of-fact communication and popular explanation, but one may use a formal style for both, the other a casual style.

As a product of these four dimensions I believe we can characterize the various relations that hold among registers within a variety of a language. 'The criteria are not absolute or independent, they are all variable in delicacy, and the more delicate the classification, the more the [four] overlap' (Halliday et al. 1964:93).

1.4. However, even within this framework, it is not possible to predict the forms and syntax that will be used for a register, and this fact has been the basis for criticism of Halliday et al. in Crystal and Davy (1969) and Crystal (1972). Crystal and Davy point out that there is no one-to-one correspondence between linguistic features and a given use of language; that is, it is not possible to predict either the context in which a form appears, or the form which will appear in a given context.

It may, of course, be convenient to posit a one-for-one correlation between a set of linguistic forms and a situation, but while this relation does sometimes genuinely exist, it would be a mistake to assume that it always exists, and to talk rigidly in terms of "one language-one situation". It is more meaningful

instead to talk of ranges of appropriateness and acceptability of various uses of language to given situations. (63)

The authors suggest there is a 'scale of predictability' which ranges from features predictable in a given context to those whose occurrence is totally unpredictable, and there is also a 'scale of utilization' in which some registers may contain almost any forms, while others are very restricted as to the forms that will occur.

1.5. When we examine how registers differ and the features recurring in several occurrences of one register, it becomes apparent that approaches to registers like both discussed above are needed. For, (1) we must be able to talk about how one register fits into the overall pattern of registers in a variety of language; (2) we must be able to account for the association of certain forms in the verbal repertoire with certain registers; and (3) we must be able to account for variation in the actual features of more than one occurrence of one register.

It is only because we have some idea of the limits and definition of a register that we could mark a lexical item like good taste as +advertising, +etiquette, +interior decorating, or that we can recognize the fact that the register of humor is almost exclusively borrowings from other registers, or that we can tell when something is written 'out of register'. In this paper I hope to show the kinds of features which must be examined in order to define a register and thus begin to explain these facts.

1.6. The restricted language of newspapers, journalese, is an excellent subject for empirical research into register variation, because it forms a large convenient corpus, contains several registers, all associated by certain shared features, and is recognized as such by those who use it. Thus we can examine not only the variation in features, but also how the users of this language view what is appropriate to it.

Within American newspapers there are several registers; there is variation and differences in appropriateness among the languages of news, sports, editorials, society pages, features, etc. All these do have recognizable characteristics of journalese, as evidenced by the existence of newspaper style manuals. Also, reporters must have the ability to switch registers, i.e., a news writer may write 'hard news' stories, features, and opinion columns; and a sports writer may write up on the same day a football game and the sanctions imposed on a university for recruiting violations, which cannot be written in the same style or for the same function.

Also, since there is variation within a single register, we must accept the fact at the outset that no individual story should be taken as representative of a single register nor that within a single register will all stories be written in the same style for the same function, and thus not with the same language.³

1.7. The linguistic research that has been done on newspapers is indicative of the variation in journalese outlined above.⁴ Straumann (1935) analyzes the block language of headlines, showing that it differs both in syntax and semantic

interpretation from other forms of English. For example, frequent ellipsis of auxiliary verbs requires a different interpretation of verb forms. This can be illustrated with the headline from N15²--'Two reported negotiating for Century Twentyone'. In headlines, two must be the passive subject of reported with deletion of be, for the present tense is used to express past time in headlines (NIXON QUITs) and the infinitive for the future (NIXON TO RESIGN). Thus, it cannot be the two who did the reporting.

Leech (1970) discusses the use of English in advertising copy and how the selection of forms is made when language is used for a well-defined purpose. He there introduces the idea of role borrowing, '... the use in one role (field of discourse--WDW) of linguistic features appropriate to another' (100). Thus, a television advertisement may start out like a documentary using the features of journalese and end up selling eggs; or a soap opera format might be used to sell mouthwash. We shall see this is an important feature of journalese as well.

Crystal and Davy (chap. 7) examine articles from two newspapers on the same subject. Although both give the same information, their styles vary widely in the areas of sentence length, use of passive verbs, and degree of formality. Other factors which they associated with journalese in the stories are inversion of subject and predicate, sentence-initial placement of adverbs, use of past tense forms throughout, and frequent nominal modification. From this study they conclude that the language of newspapers is '... a range of usage which may be tapped when necessary, to a greater or lesser extent' (190).

These studies show that registers may vary at every level of linguistic description; vocabulary is not the principal area of difference as is sometimes suggested (Trudgill 1974:104). Certain lexical items and grammatical features appear to be unmarked in terms of their appropriateness to a given register.

2. Newspaper style. The literature on how aspiring journalists should write is a good indication that in America and England there is a restricted language for the news media recognized by those in that profession. Learning this restricted language is the major part of journalism curriculums in many schools in this country. Often a prospective reporter will spend months learning the style of the newspaper by which he is employed before being allowed on the regular staff of writers.

In general, these manuals are prescriptive, giving the do's and don't's of journalese in the areas of vocabulary, sentence structure, and story composition. The features of news and sports registers selected for study in this paper have been suggested by the guidelines laid down in these manuals and by my own experience as a copy editor on a newspaper staff. A brief review of this literature will be useful in placing the parameters analyzed in their context.⁶

2.1. There is much emphasis on 'readability', which means the writer should avoid verbosity, 'imperfect sentence structure', and technical terms; he should use instead a conversational style (Heyn and Brier 1969:11). It would be interesting to compare the average length of sentences in journalese to that in other registers, but this is impractical for a study of this

scope, and so I have used a simple statistical test to find out if there is any difference between sentences per line in news and sports stories.

2.2. Another stylistic suggestion is that writers avoid the passive voice. Active verbs are economical and easy to read, while passives lengthen sentences and may confuse the reader (Heyn and Brier 1969:23). In light of this, I have studied the frequency of passive verbs in this data, comparing the proportions in news and sports stories and those two to the proportion in a random sample of texts.

2.3. The recommended structure of news stories in the inverted pyramid style, that is, the main points of a story should be given in the first few paragraphs and the remainder of the story is background material in order of decreasing importance. This structure is justified by the belief that newspaper readers spend only a few minutes a day reading, and so need to be able to get the facts quickly, and by the necessities of newspaper publishing--a story which turns out to be too long for the space allotted must be cut without loss of any important details (Gelfand and Heath 1969:21; Warren 1959:85-87). There may then be a difference in the content of the first paragraphs of a story and the remaining paragraphs, and so there may be an observable difference in linguistic features. Another statistical test is used in this paper to compare the proportion of passive verbs in the first four paragraphs of stories with that in the remaining paragraphs.

2.4. The nonquantitative features examined here are examples of the principal device for making a story more interesting--adding 'color'. It is not possible nor useful to give an absolute definition of color in journalese. There are though two senses in which the term is used in this context. 'To color' a story is to distort the facts, while 'adding color' is breaking the flow of objectivity by a descriptive characterization, alliteration, metaphor, or some other device. Color in this sense is essentially the creative aspect of newspaper writing. Sports stories have a reputation for being more colorful than news stories, and so I shall examine the devices found in each for similarities and differences (Warren 1959:72; Heyn and Brier 1969:80-100).

3. Features studied. There are numerous features which could be examined for differences between news and sports registers, as is apparent from the literature on newspaper language. I have selected seven:

- I. Nonquantitative features
 - A. Additions of color
 - 1. Isolated expressions
 - 2. Collocations
 - B. Lexical spread
 - 1. Descriptive quote words
 - 2. Synonyms
- II. Quantitative features
 - A. Sentences per line
 - B. Proportion of passive verbs
 - C. Proportion of mummy passives

The division into nonquantitative and quantitative is based on the fact that it is not the variation in frequency of the expressions which add color (the words in the lexical spread being participants in this also) which is important, but the difference in forms used and/or similarity of devices for adding color. Comparing frequency in this area implies that the items used in news and sports stories are identical, and this is certainly not true. On the other hand, the proportion of passive verbs in a register is a more valuable feature than the specific verbs that the register passivizes.⁷

3.1. Nonquantitative features. The color expressions studied here are either (1) isolated lexical items nonessential to the facts of the story but which provide more descriptive detail, or (2) collocations, which are also isolated in that the forms do not recur, but which do conform to a typically journalese pattern.

In the lexical spread of the registers, I have compared two areas: descriptive quote words and recurrent synonyms. I have defined a descriptive quote word as a speech act tag which is not neutral in connotation about how the speaker feels about what he said, his attitude toward the situation under discussion, or the context in which the statement is made.⁸ Thus, the neutral quote words are forms of say, tell, state, according to, ask, reply, and learn.⁹

Recurrent synonyms are usually descriptive verbs which are used in place of some more common verb in news and sports stories, e.g. synonyms for defeat in sports stories.

3.2. Quantitative features. For these features I have used a simple statistical test by which two proportions may be compared, telling us whether there is a significant difference between the two (cf. Appendix C).

3.2.1. Being primarily concerned with the difference between news and sports registers, I have tested the proportion of sentences per line in news versus that in sports.¹⁰ For this purpose I considered a sentence as bounded by a capital letter and a period. Thus each of the following counted as one sentence:

(3) No such claims in behalf of the '76 Yankees. (S5)

(4) Those arrested were:

Name, age, street address, City; (six such identifications follow) ... City. (N17)

3.2.2. The tests for passive verbs compare the proportion of passives in the total verb population of a type of story to an independent estimate of this proportion from a random sample of texts.¹¹

3.2.3. The questions suggested by inverted pyramid style are whether there are significant differences in the language of the first four paragraphs of the stories in one register and the remainder of the paragraphs in that group, and whether news and sports stories vary in this aspect. Thus, I have compared the proportion of passives in the first four paragraphs (mummy passives) to the proportion in the remaining paragraphs (background paragraphs).

3.2.4. In the last two parameters arises the question of what is considered a verb. As in determining what is a sentence, some decisions of this nature will seem arbitrary, but it is important that the specifications used are followed throughout. I made the basic unit for counting verbs the 'verbal phrase'; modals and auxiliaries were not counted separately from their main verbs (cf. Svartvik 1966:10-24). Participles were not counted when they appeared as nouns (5) or as pronominal modifiers (6-7):

- (5) ... in the shooting and blinding of X ... (N3)
 (6) ... for widows and orphans of slain policemen ... (N1)
 (7) ... about X's deteriorating mental condition ... (N13)

But verb phrases like (8) were counted:

- (8) A Chicago firm headed by X ... (N11)

Below are two lists of common verb phrases, illustrating some that were counted as one verb (9) and others counted as two (10).

- | | |
|---------------|------------|
| (9) be to V | (10) let V |
| (un)able to V | need to V |
| (have to V | want to V |
| | have V+ing |
| | make V |

Both verbs in phrases like (10) often occur with surface subjects, while those in (9) do not.¹²

3.3. One further variable in this study is the comparison of these registers in two newspapers. Thus I shall compare not only general characteristics of the news and sports registers, but also how each one varies in separate contexts, and whether the differences between the two registers are the same in both contexts.¹³

4. Nonquantitative features. This section contains a discussion of some differences between news and sports stories in the lexical items selected to add color. In certain areas, the samples of these registers do not provide a large number of examples, but I believe our intuitions about newspaper stories can make up this gap enough for the specific point to be made. In general, we shall see that the same formal devices are found in both registers for the selection of color words--and thus are probably characteristic of journalese. But the actual forms that occur are quite different, these being particular to the register. Also, we shall see differences in the treatment of these devices in the Chicago Tribune (CT) and the Champaign-Urbana Courier (CUC).

4.1. Additions of color.

4.1.1. Isolated expressions. Many examples of isolated expressions are role borrowings into both news and sports. In sports stories these represent the lexical spread and technical vocabulary of sports events. These usually occur without any explanation or gloss, thus making the sports pages reputedly

difficult to understand for the noncognoscenti. Also, there is little relation between the literal meaning of the technical term and its meaning in context, e.g., 'a hat trick in soccer is one player's scoring of three goals, similarly sacrifice fly and bunt in baseball, safety and clipping in football, etc.

In the news stories, we find borrowings like SOL and nolle proes from legalese, both in N2. These terms are explained in the paragraph following their introduction and then used throughout the remainder of the story.¹⁴ Similar borrowings that would be found in the news register are from the language of diplomacy detente, congressional proceedings filibuster, etc.

One difference between news and sports is evident from these borrowings. The sports world provides the events and personalities that appear in sports stories; and despite the large variety of sports reported, they form a more unified subject matter than do the events reported in news stories. Also, sports stories are about events with which most newspaper readers may be involved (at least as observers or fans) and involved in more areas than the subject matter of news stories. Thus I think there is more freedom to use technical vocabulary and without glosses in sports, while the great variety of registers from which news stories borrow prevents this. This does not appear to be a parameter on which newspapers will differ significantly.

Additions of color may also be in phrases, including a descriptive adjective, verb, or noun. In this both news and sports registers participate to the same extent. The phrases in (11-17) are from N10, the results of a pre-election poll which revealed Ford and Carter to be statistically even in Illinois. The story itself is one of the longest in the sample, and provides background material on polling and the election, as well as presenting a scenario of election night in the state.

- (11) ... Ford leads Carter by a shaky single point ...
- (12) ... the campaign and debates have failed to produce any exceptional enthusiasm ...
- (13) ... the campaign has been a troubling and volatile one ...
- (14) The volatile Illinois vote ...
- (15) ... the voters' difficulty in firmly fixing on one or the other candidate hasn't been eased dramatically ...
- (16) The final and most dramatic moments ...
- (17) ... the rate of turnout could have dramatic impact on the outcome in Illinois.

These expressions--no doubt convey what the writer intended in writing the story--to make the story more important, the poll more significant, the reader's expectation of the outcome of the election less certain.

Phrases comparable to these in N10 are common in the sports stories of the sample:

- (18) This is a World Series that will be remembered as dreadfully dull for the most part and sprinkled heavily with mediocrity in the realm of defense. (S5)
- (19) ... this yawner of a World Series ... (S1)
- (20) ... Michigan had to scrap for a victory ... (S6)
- (21) ... rifling a rebound past Hawk goalie X ... (S7)
- (22) The Hawks cut the deficit to 2-1 on some snazzy skating and sleight of hand ... (S7)

N10 is also similar to sports stories in that it contains frequent examples of contraction of auxiliary verbs (not counting those in direct quotes), as do the sports stories, while most news stories do not. The extensive use of additions of color like those above seems thus to be correlatable with a less formal style of discourse.

We have seen in this section that for isolated expressions which add color there are two devices which are used by both registers: role borrowing and descriptive lexical items. The phrases and borrowings in news stories perhaps seem less colorful because they occur in a greater variety of contexts than those in sports stories and so seem less unusual.

4.1.2. Collocations. There are more examples of unusual collocations in the sports sample of this data than in news. The news register may be represented by two in N4:

- (23) ... a tax-exempt, not-for-profit, Illinois corporation.

While the first of these compounds is fairly common, the second seems unusual because its more common doublet nonprofit was not selected. It is in formation similar to (24-29) from the sports sample.

- (24) three-run homer (S4)
- (25) game-tying homer (S4)
- (26) three-run, game-clincher (S5)
- (27) game-winning kick/drive (S11)
- (28) go-ahead play (S16)
- (29) pass-crazed drive toward the Illinois goal (S14)

All these compounds are derived from relative clauses, e.g.

- (30) for not-for-profit and (31) for (28).15
- (30) ... a corporation which is not operating for profit ...
- (31) ... a play on which the team goes ahead in the score ...

In sports stories, verb compounds are common, such as out-skate and outhustle from (S2) and to machine-gun pucks in (S7). We also find VV nominalizations:

(32) ... the receiving end of a nifty give-and-go ... (S7)

Finally, proper names are often found in derivations, e.g., a hockey team playing without star Bobby Orr is Orr-less, as in scoreless (S2), and the election poll (N10) revealed that 30 per cent of those voting for Ford were anti-Carter voters.

Again, we can see that both the news and sports registers use the same devices, but that the forms are appropriate to the event reported.

4.2. Lexical spread.

4.2.1. Descriptive quote words. The descriptive quote words (DQ) used in the sample are set out in Tables 1 and 2, on the following pages. Table 1 gives by story the DQs found in all 22 news and 20 sports stories examined; Table 2 is a comparison of the news and sports DQs in the two newspapers studied here.

It is obvious from Table 1 that more DQs occurred in the CT texts than in those from the CUC. And if the raw data in Appendix A is consulted, one can see that the frequency of DQs in comparison with total quote words is greater in CT news and sports than in CUC news and sports.

Obviously it is not possible to make any conclusive statement about what is the appropriate frequency of DQs in news and sports registers. We might expect that since sports writers seem to add more color to their articles, that the frequency of DQs in sports stories would be greater than in news stories, but this does not hold for the CUC. What is interesting is that the CT contains a much higher proportion of DQs in both news and sports than does the CUC; thus the CT writers use a greater variety of DQs and there is much more variation between the two registers than there could be in the CUC (cf. Table 2).

The DQs that appear in both news and sports stories (Table 2) cannot tell us much about the two registers, but a pattern emerges in the different DQs used for news or sports. For example, the news DQs tend to be appropriate to the context from which the quote is taken, e.g. rule, order, testify from courtroom proceedings, and to the attitude of the speaker toward the statement, e.g. accuse, deny, pledge, promise, argue. The sports DQs, on the other hand, often make reference to the speaker's mood or attitude toward the situation at the time he is quoted, e.g. the starred DQs in Table 2. It is evident that the use of DQs is inherent to journalese but the specific forms which are selected depend upon the register. The difference between news and sports DQs would probably best be described by reference to the fact that the writer is trying to characterize the context of situation of the quote (Firth 1964b:182).

A comparison of the two papers as in Table 2 will confirm what we noticed about them in terms of frequency of DQs. The news and sports DQs characterize the registers in the CT, while DQs could not be used to differentiate news and sports registers in the CUC. Thus the two registers are better defined relative to one another on this parameter in the CT than in the CUC.

Descriptive Quote Words

N1:	cite, claim, order, rule
N2:	accuse; charge, concede; declare, deny, note
N3:	charge, indicate, order, recall, testify
N4:	admit, announce, comment, estimate, promise, refer
N5:	add, admit, note, testify
N6:	recommend; testify
N7:	add, call, testify
N8:	explain, warn
N9:	maintain; point out
N10:	indicate, make clear, note, reveal, see
N11:	add
N12:	call (on)(for), note
N13:	argue, note
N14:	reveal, testify
N15:	add, cite, contend
N16:	estimate, explain
N17:	report
N18:	allege
N19:	allege, deny, suggest, term, pledge
N20:	add, point out, report
N21:	attribute
N22:	add, ask, cite
S1:	announce, declare, philosophize, sigh, swear
S2:	contend, lament, mutter, recommend, report, see
S3:	indicate, reveal
S4:	admit, begin, deny, point out, remind
S5:	add, admit, explain, knock
S6:	comment, concede, crack
S7:	admit, decree
S8:	yell
S9:	
S10:	
S11:	
S12:	
S13:	
S14:	acknowledge
S15:	add, continue
S16:	
S17:	note
S18:	believe, note, think
S19:	
S20:	

Table 1

DQ Comparison: News versus Sports

<u>News only</u>	<u>Both</u>	<u>Sports only</u>
Chicago Tribune		
accuse	add	begin
call	admit	contend
charge	announce	*crack
cite	comment	decree
claim	concede	*knock
estimate	declare	*lament
maintain	deny	*mutter
make clear	explain	*philosophize
note	indicate	remind
order	point out	report
promise	recommend	*sigh
recall	reveal	*swear
refer	see	*yell
rule		
testify		
warn		
Champaign-Urbana Courier		
allege	add	acknowledge
argue	note	believe
ask		continue
attribute		think
cite		
contend		
deny		
estimate		
explain		
pledge		
point out		
report		
reveal		
suggest		
term		
testify		

Table 2

Finally, it must be noted that no one story can be predicted to be in a news or sports register simply by examining its DQs, just as we cannot predict which DQs will appear in a given story. Consider, for example, the DQs of S3 and S4 which characterize sports stories no more than do the DQs of N9 and N10 characterize news. It is the patterns that appear within the registers that define the differences in DQs.

4.2.2. Synonyms. In this section I simply want to show that the common use of a variety of words for certain concepts in sports stories is also employed by news writers, the difference being in the concepts for which a variety of expressions are needed. In (33-36) are given four sets of synonyms which I found throughout the sports stories in the sample.

- (33) defeat/win: blitz, bury, bop, chew up, romp, upset
- (34) score a touchdown/goal: bowl in for, dive in for, explode for, punch over for, rack up, rush for
- (35) move on the field: crunch, march, plunge, power, race, ramble, roll out, sprint, swoop, tote, pass/pitch/toss
- (36) hit a baseball: blow, crack, hammer, knock, slam

For comparable expressions in news stories we can also look at synonyms for winning--an election (based on forms in N21):

- (37) a. to be (re)elected
- b. to seek (re)election successfully
- c. to win (re)election
- d. to score an election win/victory
- e. to win in a district
- f. to win a plurality
- g. to defeat the incumbent

A similar list could be compiled for articles about court cases, in which synonyms for verdicts occur:

- (38) a. to find (not) guilty
- b. to be found (not) guilty
- c. to return a verdict of (not) guilty
- d. to convict
- e. to acquit
- f. to absolve from guilt

Again we see the need for variety is common to both news and sports stories, and the same device is used to obtain it; the two registers do differ, however, in the forms used.

4.3. Summary. The main point that arises from the preceding discussion of nonquantitative features is that news and sports registers do vary in vocabulary, but that the strategies of selection of the lexical items for adding color are the same in both. The colorful expressions in news stories may seem less colorful because they are more formal in style of discourse and more likely to occur in other contexts. Finally, we have seen that at least in some areas, the registers in the Chicago Tribune are better defined with respect to each other, than they are in the Champaign-Urbana Courier.¹⁶

5. Quantitative features. In this section I shall present the results of a simple statistical test run with various aspects of the data. It should be kept in mind that the results are based upon figures obtained for a group of stories; thus,

hopefully, we may have some measure of the register with respect to these features. It will not be claimed that individual stories are predictable with respect to the results. A discussion of the statistics is given in Appendix C.

5.1. Sentence length. The test for a significant difference in sentence length is based on two hypotheses: (1) news and sports stories have an equal proportion of sentences per line; (2) sports stories have a greater proportion of sentences per line. Using a normal distribution, the proportions for news and sports stories were considered independent variables and tested for significance at the .01 level. A score significant at this level means we can predict with 99 per cent accuracy that the proportion of sentences per line in sports stories will be greater than that in news stories, i.e., that we could reject hypothesis (1) above 99 per cent of the time. Tables 3 and 4 show the proportions being compared and the results of this test.

CT Sentence Length

N: S = 270 L = 1092 $\pi_n = .247$

S: S = 405 L = 1115 $\pi_s = .363$

$H_1: \pi_s = \pi_n$ $H_2: \pi_s > \pi_n$

$Z_{.01} = 2.33$ $Z_{cal} = 5.92$

Accept H_2

Table 3

CUC Sentence Length

N: S = 295 L = 1250 $\pi_n = .236$

S: S = 327 L = 1251 $\pi_s = .261$

$H_1: \pi_s = \pi_n$ $H_2: \pi_s > \pi_n$

$Z_{.01} = 2.33$ $Z_{cal} = 1.44$

Accept H_1

Table 4

In the CT, the S/L proportion for news stories was .247, for sports stories .363, a difference which proved to be significant; thus for the CT we may accept hypothesis (2) above. In the CUC, the S/L proportion was .236 for news, .261 for sports. This proportion did not test out significant at .01; thus we accept hypothesis (1) above. The S/L proportion for each story in the sample is provided in Appendix A. Despite the variation in the stories' S/L, one can see that the CT news

has consistently smaller proportions than the CT sports, while this is not true of the CUC registers. And the statistics indicate that if we were to repeat such a sampling, the results would be the same in 99 out of 100 cases.

It may seem that since the two papers differ in the significance of this variable that sentence length is not of value in determining a consistent difference between news and sports registers. Further research on other newspapers would have to be conducted before any conclusion was reached.

However, we might also say that the register difference in the CT is more marked in terms of sentence length than in the CUC. This is consistent with previously discussed variables--the CT stories were found to have a greater variety of descriptive quote words than the stories in the CUC. In both variables the difference between news and sports registers in the CT is more marked than it is in the CUC. In this context, the results of the tests for sentence length is what we might expect, that is, register differences are less well-defined in the CUC. Thus while sentence length may not always be useful in defining register differences, it does measure the degree of register difference between the two papers studied here.

5.2. Passive verbs. To test whether there is a significant difference in the proportion of passive verbs in news and sports stories, I first compared the two proportions for each paper. These results are given in Table 5.

Passive Verbs: News vs. Sports

Chicago Tribune

N: PV = 134 TV = 810 $\pi_n = .165$

S: PV = 55 TV = 1009 $\pi_s = .055$

$$H_1: \pi_n = \pi_s \quad H_2: \pi_n > \pi_s$$

$$Z_{.01} = 2.33 \quad Z_{cal} = 7.64$$

Accept H_2

Champaign-Urbana Courier

N: PV = 124 TV = 758 $\pi_n = .164$

S: PV = 46 TV = 764 $\pi_s = .060$

$$H_1: \pi_n = \pi_s \quad H_2: \pi_n > \pi_s$$

$$Z_{.01} = 2.33 \quad Z_{cal} = 6.42$$

Accept H_2

Table 5

The proportion of passives in news stories is observationally greater in both instances--CT .165 vs. .055 for sports; CUC .164 vs. .060 for sports--and so the two hypotheses proposed were: (1) the proportion of N is equal to the proportion of S; (2) the proportion of N is greater than the proportion of S. For each paper, the N proportion proved significantly greater than S; thus if we were to repeat this sampling, we should expect news stories to have consistently greater proportions of passive verbs than sports stories. We may assume the two proportions represent different population samples, and therefore news and sports registers are differentiated by the number of passive verbs that occur.

Having found the relationship N is greater than S exists, I obtained an independent estimate of the passive verb population (R) from a random sample of texts (given in Appendix B), to see if news and/or sports stories fall outside what might be considered the normal frequency of passives. By comparing news and sports registers to R, we can explore the relation between journalese and American English for this parameter. R turned out to be .116, which is observationally less than our N proportions, but greater than the S proportions. And so for each test, two hypotheses were set up: for news--(1) N is equal to R; (2) N is greater than R; for sports--(1) S is equal to R; (2) S is less than R. The results are given in Tables 6 and 7. It can be seen that in each case the news stories had a significantly greater proportion of passive verbs than the random sample, and sports stories had a significantly smaller proportion.

Passives: News vs. R

Chicago Tribune

N: PV 134 TV 810 $\pi_n = .165$

R: PV 105 TV 905 $\pi_r = .116$

$H_1: \pi_n = \pi_r$ $H_2: \pi_n > \pi_r$

$Z_{.01} = 2.33$ $Z_{cal} = 4.34$

Accept H_2

Champaign-Urbana Courier

N: PV 124 TV 758 $\pi_n = .164$

R: PV 105 TV 905 $\pi_r = .116$

$H_1: \pi_n = \pi_r$ $H_2: \pi_n > \pi_r$

$Z_{.01} = 2.33$ $Z_{cal} = 4.14$

Accept H_2

Table 6

Passives: Sports vs. R

Chicago Tribune

S: PV 55 TV 1009 $\pi_s = .055$ R: PV 105 TV 905 $\pi_r = .116$

$$H_1: \pi_s = \pi_r \quad H_2: \pi_s < \pi_r$$

$$Z_{.01} = 2.33 \quad Z_{cal} = 6.04$$

Accept H_2

Champaign-Urbana Courier

S: PV 46 TV 764 $\pi_s = .060$ R: PV 105 TV 905 $\pi_r = .116$

$$H_1: \pi_s = \pi_r \quad H_2: \pi_s < \pi_r$$

$$Z_{.01} = 2.33 \quad Z_{cal} = 4.83$$

Accept H_2

Table 7

We thus have three populations represented, one for (approximately) all American English, one for news, one for sports. We may then say that journalese is differentiated from other types of English by this parameter; news registers may have a greater proportion of passives, sports registers less.

There is however a great deal of variation in the proportion of passives among the individual stories (cf. Appendix A). Apparently, we cannot predict with a great deal of accuracy the proportion of passives in a single story by reference to its register, except relative proportions among news, sports, and other texts. Such individual versus group patterns have emerged throughout this study. For example, the descriptive quote vocabulary of a single story cannot be taken as an indication of its register, nor can individual proportions of sentences per line, as examined above, be used to place a story in its register. Thus, again it can be seen that no one newspaper story clearly reflects its register, unless one has some knowledge of the features of the aggregate.¹⁷

As a final note, I tested 13 Associated Press news stories and 15 AP sports stories against the population estimate R (Table 8). For neither register were the proportions of passive verbs significantly different from R. Given the fact that the CT and CUC mark register differences by this parameter and the Associated Press does not, it may be that news

Passives: AP vs. R

N: PV 120 TV 938 $\pi_n = .128$ R: PV 105 TV 905 $\pi_r = .116$ $H_1: \pi_n = \pi_r$ $H_2: \pi_n > \pi_r$ $Z_{.01} = 2.33$ $Z_{cal} = 1.14$ Accept H_1 S: PV 89 TV 917 $\pi_s = .097$ R: PV 105 TV 905 $\pi_r = .116$ $H_1: \pi_s = \pi_r$ $H_2: \pi_s < \pi_r$ $Z_{.01} = 2.33$ $Z_{cal} = 1.80$ Accept H_1

Table 8

agencies vary to the extent which they make use of possible features to differentiate registers.

5.3. Mummy passives. The last tests conducted with this data are for significant differences between the proportion of passives in the first four paragraphs of news or sports stories (mummy passives) and that of the remaining paragraphs (background passives). For these tests, the proportion of mummy passives M and background passives B were treated independently for each group of stories. The hypotheses in each case were: (1) M is equal to B; (2) M is greater than B. In Table 9 (following page) we can see that there was a significant difference in the CT news stories, but not for the CT sports.¹⁸ Table 10 shows neither CUC news nor sports manifested a significant difference for this parameter.

I also checked the Associated Press stories for this feature and found that AP news stories did show a significantly greater proportion of mummy passives, while AP sports stories did not. These results are given in Table 11.

These tests may be interpreted along two lines. One, as we have seen before, registers in the CUC are not as marked relative to each other as they are in the CT; thus the proportion of mummy passives in news and sports stories are not differentiated. That is, the composition of news and sports stories is the same with respect to this parameter. In the CT, news and sports stories may be differentiated by the frequency of passives found in the first four paragraphs of a group of stories. Two, it may not be the case that all news agencies participate to the same extent in the use of a given feature, such as the

CT Mummy Passives

News

4P: MP 41 4V 168 $\pi_m = .244$ RP: BP 93 BV 642 $\pi_b = .145$ $H_1: \pi_m = \pi_b$ $H_2: \pi_m > \pi_b$

Z.O1 = 2.33 Zcal = 3.07

Accept H_2

Sports

4P: MP 12 4V 192 $\pi_m = .063$ RP: BP 43 BV 817 $\pi_b = .053$ $H_1: \pi_m = \pi_b$ $H_2: \pi_m > \pi_b$

Z.O1 = 2.33 Zcal = .55

Accept H_1

Table 9

CUC Mummy Passives

News

4P: MP 22 4V 122 $\pi_m = .18$ RP: BP 102 BV 636 $\pi_b = .16$ $H_1: \pi_m = \pi_b$ $H_2: \pi_m > \pi_b$

Z.O1 = 2.33 Zcal = .55

Accept H_1

Sports

4P: MP 9 4V 136 $\pi_m = .066$ RP: BP 37 BV 628 $\pi_b = .059$ $H_1: \pi_m = \pi_b$ $H_2: \pi_m > \pi_b$

Z.O1 = 2.33 Zcal = .31

Accept H_1

AP Mummy Passives

News

4P: MP 32 4V 174 $\pi_m = .184$

RP: BP 88 BV 764 $\pi_b = .115$

$H_1: \pi_m = \pi_b$ $H_2: \pi_m > \pi_b$

$Z_{.01} = 2.33$ $Z_{cal} = 2.46$

Accept H_2

Sports

4P: MP 20 4V 214 $\pi_m = .093$

RP: BP 69 BV 703 $\pi_b = .098$

$H_1: \pi_m = \pi_b$ $H_2: \pi_m > \pi_b$

$Z_{.01} = 2.33$ $Z_{cal} = .22$

Accept H_1

Table 11

proportion of mummy passives. Because the CT has consistently shown more marked differentiation of the two registers, we may prefer to say that the registers in the CT are better defined with respect to each other than they are in the CUC.

5.4. Summary. In this section we have seen statistical methods can yield significant results in differentiating between two registers. Relative to one another, news and sports stories may differ in sentence length. Also, both registers deviate from a random estimate of the proportion of passive verbs in American English--news stories have a greater frequency, sports stories a smaller one. News and sports stories may also be differentiated by the proportion of passives found in the first few paragraphs of the stories--news stories may show a significantly greater proportion of mummy passives than background passives, while sports stories are not structured in this way. Finally, news agencies may vary in whether they use a given parameter to define their registers, and thus in how well the two registers are differentiated from one another.

6. Conclusions. From the data presented in the preceding sections information about registers arises in three areas: (1) how two registers may differ; (2) the variation that exists within a single register; (3) the differences that appear between two occurrences of a register in different contexts.

6.1. The news and sports registers examined here were found to differ at several linguistic levels, but certain patterns common to both emerged, which I have attributed to their mutual participation in the restricted language of American journealese. The two registers differed in the lexical items selected to add color and in their lexical spreads; however, the same principles--register borrowing, synonyms for verbs--were employed in both. In the syntax, both registers used characteristic journealese compounds and both deviated from an estimate of the proportion of passive verbs in American English. Regarding the structure of the speech event, news stories were found to have longer sentences than sports stories and to differentiate the style of their first few paragraphs from that of the remaining paragraphs, while sports stories did not.¹⁹ In style of discourse, sports stories may be said to use more indicators of informality, e.g. contraction and descriptive quote words to add color. There is then support for positing that news and sports stories represent different registers by their use of language, but that this variation occurs within the restricted language of newspapers. Thus, there is a complex of features which can be used to define the registers of news and sports.

We also may note that journalists' intuitions about journealese, as manifested in newspaper style manuals, are correct in realizing that journealese is different from American English in general, and that there are differences in appropriateness in the language used for various types of stories.

6.2. There is however variation within the two registers in the features mentioned above. For example, there are sports stories with relatively high proportions of passives and few typically sports color expressions like S3. And there are news stories, such as N10, with low proportions of passives, frequent contraction, and extensive use of color. There are two conclusions we might draw from this: one, that variation within a register is permitted and that a single speech event should not be taken as representative of one register; two, that the absolute classification into news and sports registers is incorrect or not delicate enough. The latter alternative seems undesirable, for there is an explanation by which this variation may be accounted for, keeping the classification we have.

Suppose we assume that the function of discourse for news stories is, in general, matter-of-fact communication, and that of sports stories is popular explanation, i.e. reporting facts in an interesting and creative manner. These would not be fixed functions; just as we cannot predict what forms will appear in a given story, so can we not predict its style and function. These are descriptions for what actually occurs.

Then, a story like N10 may be written 'out of register'; that is, because the writer has adopted a less formal style and different function (for whatever reason--content, 'angle', instructions from his editor), he conforms to patterns which separate the story from other news stories. In this case, we can see the patterns are similar to those of the sports

register, but it may be these patterns are characteristic of news features as well. We can thus explain its deviation from what we have found are features of the news register.

Assuming we wanted to reclassify stories on the basis of style or function, there would be several problems. If newspapers followed this line of reasoning--and I think we must take into account the intuitions of those who publish newspapers--as implied in the composition of stories and the printed paper--then stories like N10 would appear on sports pages and S3 would appear on the front page.²⁰ Or there would be 'hard news' sections and 'light news' sections, with stories placed by language rather than content. I believe the opposite is true--the sale of a sports superstar's contract may be 'hard news' but only in the context of the sports world. It would be inappropriate to replace the results of a pre-election poll with such a story.

Writing 'out of register' is a relative concept. It is only because we have some idea of the language use appropriate to a given context, i.e. characteristic of most speech events in a register, that we can begin to explain the purpose of deviation for individual speech events in that register. The features we have determined here are ranges of what is appropriate not what must actually occur. That we can explain variation within a register by reference to some parameter like function of discourse is indicative of the correctness of the line of analysis pursued in this paper.

6.3. There was also a difference between the Chicago Tribune and the Champaign-Urbana Courier in the relative definition of news and sports registers. The registers in the Tribune were more marked than they were in the Courier, with respect to the features studied here. Table 12 gives a schematic description of how useful a certain feature was in determining register differences in the two papers.

	<u>Tribune</u>	<u>Courier</u>	<u>AP</u>
1. Additions of Color	yes	yes	--
2a. Descriptive quotes	yes	no	--
2b. Synonyms	yes	yes	--
3. Sentence length	yes	no	--
4. Passive verbs	yes	yes	no
5. Mummy passives	yes	no	yes

Table 12

In the Tribune, the descriptive quote vocabulary of the two registers was more varied, and there was more differentiation in what was appropriate to news or sports. Sentences per line in the Courier was not a significant variable in the test used here, while it was in the Tribune. Nor was there a distinction

made in the Courier between the proportions of mummy passives and background passives in either news or sports. This, however, does not preclude that other features might prove significant for the Courier but not for the Tribune. Given the set of features studied here, the Tribune registers are better defined in several ways than those in the Courier.

6.4. It is obvious that more research is needed before any of the parameters discussed here should be accepted as significant for register identification in general. But I think it is clear that the differences between registers extend to all levels of language and are observable when languages considered appropriate for certain uses are compared. When these features are determined, registers may be defined by the co-occurrence of certain features in that context, some referring to the variety of language in which the register occurs; others to the restricted language of which the register is a part, and still others to the register itself.

FOOTNOTES

*I would like to thank Braj B. Kachru, who read an earlier version of this paper, for his comments and encouragement; and Robert B. Panerai for his assistance in the statistics used in the text.

¹As registers are contextually defined uses of a variety of a language, the contextualization of meaning is an important area of study to explain variation in use of a lexical item such as good taste. Cf. Ellis (1966), Firth (1964a, 1964b).

²Function of discourse is essentially what Crystal and Davy term 'modality'. See also Havranek (1964) by whom the functions noted here were suggested. This parameter is also evident in dialects as has been shown by Labov (1972) in his Martha's Vineyard study.

³I have tried to avoid this issue by discussing selected groups of news and sports stories. For this study were used 12 news and 10 sports stories from five Midwest editions of the Chicago Tribune (Oct. 20-24, 1976) and 10 news and 10 sports stories from five editions of the Champaign-Urbana Courier (Oct. 30-Nov. 3, 1976). The articles chosen were all by-lined, non-national wire service stories, with a minimum length of 50 lines in the Tribune and 70 in the Courier. The stories--with two exceptions--appeared on the respective first three pages of the news or sports sections. The total number of lines examined for each type of story in the Tribune was approximately 1,100, or about 6,600 words; for the Courier, the line count was 1,250, or about 6,120 words each of news and sports. References for these primary sources are given in Appendix D.

⁴I have not had the opportunity to examine the studies of newspaper style made by members of the Prague School. For references, see Dolozel and Kraus (1972).

⁵In this paper, N1 through N12 and S1-S10 are news and sports stories from the Chicago Tribune while N13-N22 and S11-S20 are news and sports from the Champaign-Urbana Courier.

⁶Instructions from Gelfand and Heath (1969), Heyn and Brier (1969), Warren (1959), and Evans (1972) are summarized in section 2. Evans represents British English style.

⁷Several other features in which differences between the registers appear in the sample are: use of contraction; use of metaphor and simile; inversions; and verbless sentences.

⁸Descriptive quote words may also color the story in the first sense given in 2.4. Consider the following statement:

	said.
	claimed.
'The governor is a crook,' the mayor	pointed out.
	conceded.
	lamented.

We might want to consider the use of descriptive quote words in terms of the analysis of factive and nonfactive predicates in Kiparsky and Kiparsky (1971). The writer's presuppositions about the truth of the quote might affect the speech act tag chosen, although it is unlikely any DO but said would be used for a statement such as the one above.

⁹Learn is used when the newspaper itself is making a statement to the readers and assumes responsibility for the information. For example, 'Most of the antique musical instruments of the Harding Museum ... will go on the auction block next week in New York City, The Tribune learned Wednesday' in N4.

¹⁰Because there is a difference in the basic column-width used by the two papers, no comparison will be made of any feature dependent upon the number of lines; all the stories from either the Tribune or Courier have the same column-width.

¹¹It may be that the frequency of passives or use of passives in certain contexts has some effect on the implications made by the writer about the story (cf. Stanley 1975), but I shall not be concerned with this here.

¹²Certainly more precise guidelines should be used in future research; but although the figures might change if different decisions were made, I do not think the statistical significance would.

¹³There are certain limitations set upon this study by the sample. First, it might be argued that I have examined only a Midwestern dialect of American journealese; if my conclusions were dependent upon the actual forms and figures obtained, this objection might be valid. However, the purpose of this paper is to establish the fact that there are specific registers for news and sports, and that these registers are differentiated by variables common to journealese. Support for my findings would be the observation of the same kinds of differences within other newspapers; the conclusions would not be invalidated by different sets of forms and figures.

Second, because the stories were taken from the first three pages of the news and sports sections, there is some repetition of author. However, I found no significant consistencies in stories by the same author. Further, all stories in one paper are likely to conform to the style of the newspaper or be conformed to that style by the section's copy editor, reducing some individual variation. A better sampling might be obtained from different parts of the United States, with several different sized papers represented. The results of this research will be valuable as a guide to future work in this area.

¹⁴Nolle proes is used when prosecutors have insufficient evidence to take a defendant to trial, while SOL is used when they are not ready to go to trial' (N2). In both instances, the cases are dismissed and the defendants freed.

¹⁵Cf. Lees (1968) for a general discussion of nominalizations; Quirk (1968:175) for journealese compounds.

¹⁶It might be suggested at this point and in later sections that the difference between the CT and CUC is prestige. While this may be true, I shall not take into account any arguments -- based on prestige in newspapers, for then we should have to consider also quality and quantity of audience, capital outlay, etc.

¹⁷It is interesting to note that N10 which corresponded with sports stories in use of color and contraction (4.1.1.), also has a very low proportion of passives: .059.

¹⁸In the tables for mummy passives, the following abbreviations are used: 4P--first four paragraphs; RP--remaining paragraphs; MP--mummy passives; 4V--total verbs in first four paragraphs; BP--background passives in RP; BV--total verbs in background paragraphs (RP).

¹⁹This latter characteristic would become more evident if the first sentences of news and sports stories were compared; sports stories tend to use metaphorical leads or leads not indicative of the main point of the story.--As a result, the main point--usually expressed in the headline--is delayed. But in news stories, the headline and lead are usually identical in content.

²⁰This, of course, does occur; in fact, S13 appears on the front page of the Oct. 31 Courier. I believe this can be explained by reference to the audience of the paper, in this case, the influence of the University of Illinois on the cities of Champaign and Urbana.

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Appendix A: Data*

	S	L	S/L	PV	TV	P/T	MP	4V	DQ	C
N1	21	88	.239	14	59	.237	5	10	6	15
N2	19	88	.216	16	74	.216	4	15	11	20
N3	22	79	.278	12	59	.203	3	9	7	17
N4	26	121	.215	17	80	.213	2	16	6	14
N5	26	80	.325	14	69	.203	7	10	7	13
N6	9	51	.176	6	41	.146	2	19	3	9
N7	30	99	.303	4	79	.051	0	13	2	19
N8	33	124	.266	13	92	.141	3	11	2	11
N9	15	65	.231	9	47	.191	6	17	2	10
N10	29	127	.228	5	85	.059	2	17	6	7
N11	27	101	.267	18	81	.222	5	14	1	18
N12	13	68	.191	6	44	.136	2	17	5	9
	270	1092	.247	134	810	.165	41	168	58	152
N13	23	96	.240	10	69	.145	6	13	2	12
N14	25	119	.210	19	60	.317	4	11	2	6
N15	22	108	.204	1	60	.017	0	11	3	19
N16	36	117	.308	3	90	.033	0	11	4	14
N17	44	191	.230	29	115	.252	3	14	2	21
N18	22	107	.206	16	61	.262	3	17	1	8
N19	38	140	.271	5	108	.046	2	14	5	24
N20	17	94	.181	18	51	.353	4	17	4	12
N21	37	135	.274	14	71	.197	0	7	1	7
N22	31	143	.217	9	73	.123	0	7	4	10
	295	1250	.236	124	758	.164	22	122	28	133
S1	41	117	.350	9	122	.074	0	24	5	9
S2	40	108	.370	5	99	.051	2	11	6	12
S3	26	83	.313	7	68	.103	3	15	2	9
S4	62	146	.425	11	185	.039	2	26	6	12
S5	53	157	.338	5	135	.037	0	25	4	8
S6	43	127	.339	6	118	.051	1	29	5	10
S7	43	112	.384	2	93	.022	0	15	2	4
S8	33	91	.363	5	68	.074	2	16	1	1
S9	35	86	.407	3	64	.047	1	18	0	0
S10	29	88	.330	2	57	.035	1	13	0	0
	405	1115	.363	55	1009	.055	12	192	31	65
S11	38	141	.270	6	97	.062	0	13	0	3
S12	24	89	.270	2	51	.039	0	8	0	3
S13	35	185	.190	5	105	.048	0	13	0	0
S14	48	156	.308	6	110	.055	1	19	1	9
S15	33	99	.333	4	65	.062	0	19	2	5
S16	41	134	.310	8	80	.100	3	12	0	4
S17	21	79	.266	3	48	.063	1	12	1	7
S18	29	137	.212	3	83	.036	2	10	4	12
S19	31	116	.267	5	67	.075	1	22	0	4
S20	27	115	.235	4	58	.069	1	8	0	1
	527	1251	.261	46	734	.060	9	136	8	48

*BP = PV - MP

BV = TV - 4V

Appendix B

Texts consulted for estimate of passives R:

Associated Press. Oct. 22, 1976. 76ers acquire Erving; \$600,000 a year salary. In Chicago Tribune, section 4, 1.

_____. Oct. 23, 1976. U.S. judge orders Mobile to alter 'biased' government. In Chicago Tribune, section 1, 1.

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Chicago Tribune. Oct. 24, 1976. Ford is our candidate. section 1, 26.

Doctorow, E.L. 1975. Ragtime. New York:Bantam Books. Pp. 1-7.

New York Times News Service and Associated Press. Nov. 3, 1976. Ford concedes Carter win. In Champaign-Urbana Courier, 1.

Scheer, Robert. 1976. Jimmy, we hardly know y'all. Playboy (November), 91.

Stryer, Lubert. 1975. Biochemistry. San Francisco:W.H. Freeman and Co. Pp. 11-17.

White House Transcripts (Appendix 33). April 16, 1973. 12:00 to 12:31 p.m.

	PV	TV	PV/TV
AP Sports	11	74	.149
AP News	5	61	.082
Bach	19	127	.150
Tribune editorial	6	101	.059
Doctorow	11	120	.092
NY Times and AP	10	69	.145
Scheer	8	104	.077
Stryer	32	117	.286
Transcripts	<u>3</u>	<u>137</u>	<u>.022</u>
	105	905	.116

Appendix C

There are two tests used in this paper. One (Tables 6-8) tests whether a sample proportion of the population falls within the random expected variation for an estimate of the population proportion; this is used, for example, when we have an estimate of the population proportion of passive verbs and want to find out whether a sample proportion, say in news stories, falls outside the expected variation for that estimate. The other (Tables 3-5, 9-11) tests whether there is a significant difference between two sample proportions; for example, if we have two samples, sentences per line in news and sports stories, we can compare them to find out whether their distribution is representative of the same population. But since the population proportion is not known in the second test, we use a weighted mean of the two sample proportions as the estimator.

In conducting the tests, we set up two hypotheses as an aid to show what we are testing. These have been specified for each table in the text. The null hypothesis (H_1) is always that we are dealing with two sample proportions in the same population. The alternative (H_2) is that we are dealing with different representative proportions. We also set a level of significance for the tests. In all those used here, the significance level is .01, which means if the test proves we can reject the null hypothesis, then in the long run, the results of sample proportion testing would be expected to cause rejection of the null hypothesis 99 per cent of the time.

The critical value ($Z_{.01}$) for the tests used here is 2.33. This means if our calculated Z (Z_{cal}) is $(/Z/) > 2.33$, we will reject the null hypothesis in favor of the alternative. If, on the other hand, the calculated Z is $(/Z/) < 2.33$, then we will accept the null hypothesis.

Given that x is the occurrence of an event in a sample of size n :

Test 1: Comparison with population estimate

π = estimate $x/n = p$ = sample proportion

$$Z_{cal} = \frac{(p - \pi)}{\sqrt{\pi(1 - \pi) / n}}$$

Test 2: Comparison without population estimate

$x_1/n_1 = \pi_1$ $x_2/n_2 = \pi_2$ \bar{p} = estimator

$$Z_{cal} = \frac{(\pi_1 - \pi_2)}{\sqrt{\bar{p}(1 - \bar{p}) \left(\frac{n_1 + n_2}{n_1 \cdot n_2} \right)}}$$

$$\bar{p} = \frac{(n_1 \cdot \pi_1 + n_2 \cdot \pi_2)}{n_1 + n_2}$$

Reference:

Chou, Ya-lun. 1972. Probability and statistics for decision making. New York: Holt, Rinehart and Winston. 332-39.

Appendix D

- N1 Oct. 20. \$528,000 ruling hits 2 in fund-drive gouge.
W. Juneau. Section 1, page 1.
- N2 Oct. 20. Egan alleges Carey cover-up in freeing 57 without trial. . Crawford. 1,3.
- N3 Oct. 21. Teen found guilty of firing shot that blinded Comito. L. Strobel. 1,1.
- N4. Oct. 21. Sale of Harding Museum pieces faces legal challenge.
W. Currie. 1,1.
- N5 Oct. 21. Two cops found guilty, two others acquitted in beating. R. Phillips. 1,3.
- N6 Oct. 21. Talked out of abortion--and baby. C. Mount. 1,3.
- N7 Oct. 22. Bellow takes pride in stride: 'The child in me is delighted.' T. McNulty. 1,1.
- N8 Oct. 23. Pupil reading scores rise. C. Banas. 1,1.
- N9 Oct. 23. Most Humboldt Park arson laid to local teens.
F. Grehek. 1,1.
- N10 Oct. 24. Ford, Carter 'even' in Illinois. M. Smith. 1,1.
- N11 Oct. 24. No work done, but Howlett aide paid. J. Fritsch.
1,3.
- N12 Oct. 24. Catholics push new policy on remarriage.
J. Robison. 1,4.
- S1 Oct. 21. 4th Series game postponed by rain. F. Markus
Section 4, page 1.
- S2 Oct. 21. Knee sidelines Orr 5 days--week. N. Hilbert. 4,1.
- S3 Oct. 22. Bears may play 1978 season in Comiskey park.
C. Kollow. 4,1.
- S4 Oct. 23. Who's better--Bench or Hanson? Too close to tell.
B. Markus. 2,1.
- S5 Oct. 23. Reds sweep; two bombs by Bench. P. Dozer. 2,1.
- S6 Oct. 23. Indiana plans some tricks. B. Lamer. 2,1.
- S7 Oct. 23. Orr-less, Chicago lose 2d straight. N. Hilbert.
2,3.
- S8 Oct. 24. Irish defeat Gamecocks. M. Condon. 3,1.
- S9 Oct. 24. Wolverines chew up Hoosiers. R. Lamer. 3,1.
- S10 Oct. 24. Bucks' win costly. B. Janss. 3,2.

Appendix D, cont.

- N13 Oct. 30. Hagan's sentence ends tense wait. M. Murphy.
Page 1.
- N14 Oct. 30. One is indicted in meter case. W. Groninger. 3.
- N15 Oct. 31. Two reported negotiating for Century Twentyone.
R. Taylor. 3.
- N16. Oct. 31. Candidates keep meeting people. C. Hardwick. 3.
- N17 Nov. 1. Miller defends police action in campus eruption.
M. Murphy. 1.
- N18 Nov. 1. Urbana sign law challenged. M. Murphy. 3.
- N19 Nov. 2. Mayor is given free hand to decide landfill
operation. J. Smetana. 3.
- N20 Nov. 2. University may act on arrests. R. Taylor. 3.
- N21 Nov. 3. GOP gains; five new faces on County Board.
J. Smetana. 3.
- N22 Nov. 3. 329-vote margin fatal to county health proposal.
R. Taylor. 3.
- S11 Oct. 30. FG lifts Central to 17-14 win. M. Babcock. 9.
- S12 Oct. 30. 255 yards for Wilkins; 14-0 win for Rantoul.
P. Ayars. 9.
- S13 Oct. 31. Illini top Badgers, 31-25, on Homecoming.
L. Eubanks. 1.
- S14 Oct. 31. Illini hit-men bury Badgers. D. French. 13.
- S15 Oct. 31. Adams JC cross country champ. F. Kroner. 15.
- S16 Nov. 1. Illini jayvees top Notre Dame for first win.
D. French. 13.
- S17 Nov. 2. Blackman looks for lift from homecoming win.
L. Eubanks. 13.
- S18 Nov. 2. Buckeyes rolling without Gerald. L. Eubanks. 13.
- S19 Nov. 2. Normal still dominating Capitol. F. Kroner. 14.
- S20 Nov. 3. Central heavy favorite against Urbana Friday.
P. Ayars. 15.

A NOTE ON "SEEM"

Richard Neil Halpern

Within the generative-transformational framework, relationships between such sentences as "John kissed Mary" and "Mary was kissed by John", "It is easy to please John" and "John is easy to please", and "It seems that John is sick" and "John seems to be sick" are captured in the context of what is known as derivational history. For example, whatever particular transformational account one adopts, he will want to claim that both of the elements of this last pair can be traced to a single derivational source. Thus, I am speaking of what I take to be a specific descriptive mode, that is, a specific way of talking about the sentential relationships manifested within a language. In this paper, I will try to show that there are patterns which can only be captured by moving from a purely linear model of sentential interaction, as one has within the generative paradigm, to a model or picture of the phenomenon which permits interaction across parallel structures. And to make my argument more precise, I will have to turn to pertinent data.

Thus, to turn to the substance of my paper, I will be discussing the distribution of the word seem in semantically and syntactically related structures. Then, in the light of my account of the data, I will discuss some of the implications this study may have for such issues as language change, speaker's creativity and overall competence, and the role of models in linguistic theorizing.

I begin by examining the two relevant sentences already mentioned: the extraposed form "It seems that John is sick" and the raised form "John seems to be sick". Now, one notes that other predicates occur in both of these sentences in the slot here occupied by seem: e.g., appear, happen, be likely, be certain, be (commonly) believed, and be (commonly) thought. Further, one observes that each of these predicates exhibits an epistemic character, that is, serves to provide an epistemic status for the associated proposition in the extraposed structure. I think that it is also useful to point out here that there exist predicates which govern one of the above structures which happen not to control the other. Thus, it can be bad that John is sick, but one would not say that John is bad to be sick. Correspondingly, although John can be afraid to be sick, one is not permitted to predicate this fear of the accompanying proposition and arrive at "It is afraid that John is sick". And before leaving this first sentential relationship, we should observe that the extraposed and raised forms do not pair up perfectly. Although one can say "It seems that John will win", "John seems to win" receives only a generic¹ interpretation, and there is thus no raised correspondent. One would like an explanation of this datum, particularly in light of the fact that the above-mentioned predicates seem to pattern here (e.g., be likely and be certain permit the futuristic reading, while seem, appear, happen, etc., do not), but in this context I wish only to emphasize the point that one cannot take the relationship between the extraposed and raised structures for granted--to some degree, and in the language of metaphor, they lead lives of their own.

Now, problems arise when one attempts to dig a little deeper. Thus, "John seems like he's sick" and "John seems to be sick" are semantically kindred, but the task of positing a derivational relationship appears to be immense if not impossible. Among other things, "John" makes an extra appearance in the former sentence and the

presence of like is, to say the least, an unexplained facet of the phenomenon. One is thus tempted to say that this semantic correlation has no syntactic ramifications and that he is therefore justified in abandoning such derivational confusion. Yet, "It seems like John's sick" is bona fide English, is basically of the same syntactic structure as "It seems that John's sick" (it is perhaps as epistemically "weaker" than the extraposed structure with that as "John seems like he's sick" is "weaker" than the raised structure), and shares with "John seems like he's sick" the curiosity of what upon initial inspection appears to be a comparative marker. In effect, one finds "It seems that John is sick", "John seems to be sick", "John seems like's sick", and "It seems like John's sick" functioning side by side, and it is my best guess that any attempt to treat these relations within a generative-transformational framework will be ad hoc and painfully unrevealing.² In any case, one can try to do better.

One plausible move would be to appeal to the notion of lexical government employed above and to try to determine whether "seem" belongs to another semantically natural class. That is, it is possible that in the sentence "John seems like he's sick" seem is "taking turns" with another semantically characterizable class of predicates. And one potentially relevant class is comprised by what I will term the sensory copulas such as look, sound, feel, smell, and taste. Each of these predicates is comfortable in the copular position of simple adjectival predications: e.g., "Mary looks angry", "This music sounds lovely", and "This cloth feels soft". In each of these cases, the copula is providing information as to the manner in which the relevant judgment was made, more specifically, the mode of sensation utilized by the subject. The possibility of inserting dative expressions makes this point explicit: e.g., "This food tastes sweet to me". Now, one can view seem as, in a sense, the universalizing member of this class of sensory copulas. That is, if this music sounds lovely, then this music seems lovely, and if this food tastes sweet, then this food seems sweet. In effect, predication with each of the other members implies, perhaps only pragmatically, a correlative predication in which seem serves as the copular bridge. I should confess here that I am skirting the issue of relating this use of seem with that noted above. Suffice it to say that there is an intimate link between sensation and knowledge, and the virtual interchangeability of "John seems to be sick" and "John seems sick" should provide assurance that we are not on shakey ground.⁴ Still, I am not doing this question justice, and I can only hope that, for my purposes here, such shortshrifting is not detrimental.

Thus, having observed that seem falls in with another semantically natural class, we are ready to follow seem and its newly found cohorts to whatever other structures they may happen to occupy. And one jaunt takes us to a simple kind of comparative structure, which is fully productive. Thus, one has "John sings like a canary", "John acts like a jerk", "This food tastes like lamb", "That flower smells like a petunia", and "John seems like a prince". I suspect that the sensory copulas work in this format for the simple reason that when one compares one entity to another, he is, in effect, saying something about or predicating something about that original entity. And as Saul Wax has pointed out to me, in a philosophical context, one is prone to say that every predication involves some comparison with a paradigmatic instance, at least to some degree. To use a bland example, when one tells us that Mary is like a sister to John, simply enough, he is telling us something about Mary. Further, one notes that the dative expressions appear here

exactly as they do in the explicit copular structure: cf. "This food tastes sweet to me" and "This food tastes like lamb to me" and, again, "This music sounds lovely to me" and "This music sounds like Beethoven to me". Finally, one observes this comparative structure participating in the productive creation of adjectival expressions. Thus, one goes from "This material feels like wood" to "This material feels wood-like" and from "This woman seems like a lady" to "This woman seems ladylike" (gentlemanlike is somehow more clumsy to my ear and one wonders if we have here a semantically wonderful irony).⁵

Now, from this simple comparative structure, one is perhaps too eager to leap to such full-fledged "sentential" comparatives as "John sings like he's in love", "John acts like he's angry", "This food tastes like it's salted", and "John seems like he's sick". Thus, if we are still in the dark as to the precise semantico-syntactical relationship between the simple comparative "John seems like a jerk" and what I am awkwardly terming the "sentential" comparative "John seems like he's a jerk", even so, we have managed to locate what appears to be a suitable descriptive resting place for the otherwise anomalous "John seems like he's sick". That is, by finding another semantically natural class of predicates (actually, a subclass of a broader epistemically-oriented group) and traveling among the various configurations in which these predicates function, we have begun to trace a path through the initial confusion. Now we should try to push this branch of the analysis a little further. For note that one can also employ as if and as though in such sentential comparatives, and an accompanying gloss begins to reveal the "logical" structure of such constructions or is at least structurally more transparent. Thus, one plausible paraphrase of "John sings as if he's in love" would be "John sings as he would sing if he were in love". And in this latter sentence one finds the explicit components of a comparative schema along with the logical status of the associated sentence. In this same fashion, one notes such glosses as "John acts as he would act if he were angry", "This food tastes as it would taste if it were salted", and "John seems as he would seem if he were sick". Here, one observes that although the like in such structures must stand without the conditional element if, such glosses as "John sings like he would sing if were in love" are perfectly fine, so that the well known alternation between like and as (recall the furor over the famous Winston promotion) still manages to retain its stature to some degree. Further, if the Oxford English Dictionary has not steered us wrong, as if and as though are more basic in these "sentential" comparatives, and I will conjecture that the occurrence of like in this format is the result of a blending of sentences such as "John seems like a prince" and "John seems as if he is a prince" or something similar, but here I am getting a little ahead of myself.

At this point, let me try to summarize what I think has happened here. We have found seem working in five different structures: the extraposed ("It seems that John is sick"), the raised ("John seems to be sick"), the copular ("John seems sick"), the simple comparative ("John seems like a jerk/a prince"), and the "sentential" comparative ("John seems like/as if/as though he's sick"). Further, we have found different semantically natural classes of predicates functioning in these different structures. Within the extraposed and raised formats, we saw such predicates as seem, appear, happen, and be likely. Within the copular and the two comparative structures, we found the sensory copulas such as look, feel, taste, and, again, seem surviving nicely. And for reasons unexamined here and stemming from what I will awkwardly call its sensorially epistemic nature, seem belongs to both of these classes and is happy "everywhere".

But in discussing the matter of lexical government across syntactic structures, we can't afford to limit our investigations to these epistemically-oriented predicates. For one can find other lexical items whose structural domain extends beyond a single configuration. For example, the comparative marker like is not content to limit itself to such sentences as "John seems like a prince" and "John seems like he's sick". In "It seems like John is sick", one of our original four sentences and still something of an enigma, like has managed to sneak its way into the extraposed format. One will recall here the subtle semantic difference which hinges on the alternative choices of that and like and might be inclined to think that the epistemic "weakening" associated with "like" is a carry-over from its days in the comparative schema. More specifically, I am claiming that speakers perceive "It seems like John's sick" as the appropriate blend. Moreover, it should come as no surprise to find as if and as though making the same trip, and I will say that, in general, the speaker has bought himself something by permitting these comparative markers to function in the extraposed schema. However fine the semantic shade of difference, there are times when it will count. And further, I should point out that when functioning in the extraposed format, "like", "as if", and "as though" live a discriminating life. That is, they only allow as an associated governing predicate a predicate which joins them in participating in the comparative schemata (cf. *"It happens/is likely like/as if/as though John's sick" versus "It appears ? like/as if, as though John's sick" and *"John happens/is likely like/as if/as though he's sick" versus "John appears ?like/as if/as though he's sick").

Thus, if I may momentarily break this train of thought, I believe that at this point we are beginning to sketch a picture of one aspect of language change, a picture which can best be described by appealing to Dwight Bolinger's notion (cf. Bolinger, 1961) of a syntactic blend, which for our purposes can be recast as a semantico-syntactical blend. And let me add here that this is a notion which Bolinger has developed and emphasized throughout his published writings and stands at the heart of one facet of linguistic creativity, a facet having little to do with the possibility of infinitely multiple embeddings or unlimited conjunctions.

But before pursuing this sidelight, let me continue the study of the semantico-syntactical blend thus far described. Now that we have hold of what appears to be an intuitively satisfying concept or conceptual picture, we can at least try to exploit it. So, observe that making the journey to the extraposed structure along with such comparative markers as like, as if, and as though are such sensory copulas as look (e.g., "It looks as if John's sick") and sound (e.g., "It sounds as if John's angry"). Further, note that these predicates can only function in the extraposed schema when they are accompanying their comparative companions (cf. *"It looks that John's sick" and *"It sounds that John's angry"). Again, consider the predicate act, which participates not only in the comparative schemata but also in such copular structures as "John acts sick" and "John is acting sick". Here, I must point out that although it is possible that such a usage stems from a blending of "John seems like a fool", "John acts like a fool", and "John seems sick", the Oxford English Dictionary indicates that it is also possible that adjectives occurring after act are only variants of a general nominal usage, as is found in such sentences as "John acted the fool" and "John acted the part of the hero". In this same light, one observes that the predicate play⁶ can take both nominal and adjectival complements (cf. "John played the fool" and "John is playing dead") but is denied entry into the comparative structures (cf. *"John plays/is playing like a jerk").

Now, a number of cases point to the interaction of the raised structure, as in "John seems to be sick" and the "sentential" comparative structure, as in "John seems like he's sick". For note how the predicate pretend can leave such better known complement structures as are manifested in such sentences as "John is pretending to be sick" and "John is pretending that he is sick" to take on the appearance of a comparative in such imperative usages as "Pretend like you're sick" and "Pretend as if you're sick". Here, my best guess as to the source of the structural interaction hinges on the blend exhibited by such sentences as "John seems to be sick", "John is pretending to be sick", and "John seems like/as if he's sick"--in the problematic structures, one finds pretend following seem's lead. Moreover, the only semantic difference between "John seems to be sick" and "John is pretending to be sick" is thought to reside in the agentivity (non-stativity) of "pretend". Yet, even this difference is slim, as is evidenced by such marginal imperatives as "Seem to be sick/like you're sick when the doctor arrives" and such perfectly acceptable imperatives as "Appear to be sick when the doctor arrives". Again, the difference between "John seems sick" and "John acts sick" is of this same marginal variety, and the motivation for these problematic and apparently redundant "comparative" complements of "pretend" appears to almost too abundant.

As a next-to-parting shot, consider the sentence "This looks to be trouble", in which the sensory copula look is functioning alongside of seem in the raised structure. And one has the set of parallelisms "John looks sick" and "John seems sick", "John looks like a prince" and "John seems like a prince", and, finally, "This looks to be trouble" and "This seems to be trouble" (where it should be noted that the first sentence of this last pair exhibits a futuristic nuance). And let me close this rambling survey by pointing to what is perhaps a classical Bolingerian blend, that found in "There seems like there's a man in the room". Here, I will venture to say that speakers have switched in mid-stream from the raised format, in which the existential there is a well-known participant, and moved to the "sentential" comparative structure. That is, speakers start out with the intention of uttering "There seems to be a man in the room" and, perhaps motivated by an even stronger doubt as to the reality of the appearance, turn to the "sentential" comparative, thereby producing the bastardized form "There seems like there's a man in the room". I should say here that it is perfectly possible that this blend has caught on and is today a structure in its own right, but I believe that such questions demand psycholinguistic answers which give one a firm handle on the link between what are termed speaker's competence and speaker's performance. Moreover, at this juncture, one begins to perceive the importance of the speech patterns established within a community and, in general, the challenging problems emerging from the sociology of language.

Thus, we should now return to the more general issue at hand: the role of the conceptual picture provided by the notion of a semantico-syntactical blend in linguistic theorizing. And I will begin by simply asserting my belief that a representation in which structures are viewed in parallel fashion, in which lexical items are viewed in terms of the various configurations in which they participate, and in which various other structures can be viewed as combinations of and variations on these original structures provides one perspective on linguistic structure, more, the dynamics of linguistic structure. One needn't go out on a limb to surmise that the complicated phenomenon described above did not arise ex nihilo and,

presumably, is not finished developing. That is, even a casual perusal of the Oxford English Dictionary with reference to any of the lexical items just discussed reveals a history and an interaction far more complex than my account even begins to intimate, and one wonders to what extent these scholars had a grasp of all of the pertinent intricacies. Moreover, given this perspective, I believe that the multiplicity of dialects thus far discovered in modern linguistic investigation can be usefully viewed as variations on a shared, highly inter-connected (and otherwise complicated), and minimally differing theme, which, for each individual speaker, is always subject to further variation, depending on the verbalization of those around him (and various societal considerations) and his own creative impulses. And I cannot help but believe that I am merely mouthing common sense. For example, I find it entirely possible that a structure which one fellow learns from his comrades, who are in turn passing on to him the heritage of centuries, may for another fellow be the result of a purely creative act. Thus, it is not inconceivable to me that some one speaker will recapitulate a centuries' old structure (aspect of lexical distribution) and allow himself the liberty of employing a "sentential" comparative marker in the extraposed structure. And to say that in doing so he would be following some innate disposition or "activating" some latent rule in his grammar seems to me entirely gratuitous. Further, I believe that such happenings are the rule rather than the exception, more, the rule in a sphere of human activities and abilities extending far beyond language use. And, in general, what is at stake here, or so I believe, is a different perspective.

Moreover, support for this view of language development, both with regard to what might be termed the phylogenetic development of the entire language community throughout its history and the ontogenetic development of one of its members over a lifetime, who, I have just conjectured, might to some extent recapitulate the history of his language in his own creative efforts at communication, derives from the myriad of sentences which in contemporary linguistic analyses receive a question mark or an asterisk tempered by a question mark as their labels of grammaticality. Thus, I am guessing that it is often the case that when a speaker is unsure of a grammaticality judgment, particularly in cases in which his semantic bearings are solid or relatively so, he is merely demonstrating his inability or rather his refusal to generalize a pattern already present in his structural version of the language of his speech community. And, needless to say, it is usually the case that the inquiring linguist is pushing his language consultant in just such directions. And more, it is a corollary of my view that in such cases the linguist is not so much discovering a pre-existent reality as he is tapping the potential for new linguistic developments. In an attempt to try to legitimize this metaphysical distinction, I will appeal to the Aristotelian distinction between actuality and potentiality and claim to be arguing that not only is the class of sentences defined by the speaker's linguistic competence potential, but so are the scope and form of the principles which "define" these sentences. Admittedly, these are only hypotheses, but since they arise in what I hope to be a natural fashion in the context of the data discussed in this paper, I offer them. 8

To turn to an example, in the previous discussion I was considering the distribution of the predicate seem. But one would expect that its semantic neighbor appear would function analogously. Yet, matters are not so simple. In my idiolect, although "John appears as if he's sick" is fine, "John appears like he's sick" receives at best a softened asterisk or perhaps attains to the height of questionability. The fact that "John appears like a jerk" is also deviant, and

the fact that "It appears as if John's sick" is as much better than "It appears like John's sick" as "John appears as if he's sick" is better than "John appears like he's sick" are signs that matters not at all chaotic, but one is still a little troubled by the findings. Once more, for me it is the case that "John seems sick" is of a slightly higher grammatical status than "John appears sick" (the latter "wants" the infinitive of the raised structure), and such pairings as "John seems strong" and "John appears strong" and, again, "This room seems warm" and "This room appears warm" indicate that something is in fact going on here. Moreover, I would be surprised if this facet of the phenomenon does not connect with the one just mentioned, but for the moment I think it safe to say that matters are confusing and deeper organizing principles are desired. Yet, until such research is done, I believe that we should take note of what appears to be the inchoateness of a speaker's linguistic ability, in this case mine.⁹ And I don't at all wish to say that such inchoateness is ungoverned or inexplicable. On the contrary, I would hope that a blending model such as those utilized above will in some sense account for what from our perspective appear to be the vagaries of seem and appear. Inchoateness needn't imply caprice, and our only test can be further efforts to unravel the complexity.

As a final stab in this direction, I will say that this account of the dynamics of language interaction places the linguistic ability on a par with virtually all human cognitive faculties. The ability to perceive relationships and to generalize from them is at the heart of all creativity, and if I may offer an analogy, I believe that one can usefully compare the structure and development of a language with the structure and development of, among other things, moral codes, artistic movements, and the institutional structures of societies (political systems, economic systems, etc.). And, a priori, I see no more reason to believe that the structure of our languages is genetically determined than I do the structure of our moral codes--certainly, both cases deserve consideration. In each of these cases, members of the same species are busily concocting, and one would be surprised were he to fail to find significant parallels (I confess to being unable to define significant in this context). Within recent times, linguists have emphasized the uniqueness of the language ability, both with respect to other animal species and with respect to man's other cognitive faculties. Nothing can be lost by viewing language in a broader context, and for those who are especially interested in what is uniquely linguistic, I can think of no more appropriate framework of study. And more, even if the capacity to develop what are called natural languages is restricted to man, the capacity to think creatively goes far beyond him. Thus, in general, one is no position to artificially delimit the scope of the context, but who would have ever thought of denying such a view?

So, to return to earth and finally close this study, let me try to address the issue broached at the outset: what is the relationship between this study and the tenets of generative-transformational grammar? First, I must confess that I am assuming that this study of seem and the implications which I have drawn from it do not fit nicely into the schemata and posture of a generative grammar. Although I very much doubt that I am wrong, I have hardly demonstrated the point, and should one be so inclined, he is free to remain agnostic or to reject this claim outright. But I believe that any such dispute entirely misses the point. For what I believe to be at issue here is the attempt to understand human language. If the terminology and descriptive machinery of generative-transformational grammar serve the purpose of enabling one to formulate the results presented here, and one cannot assume that

my account is adequate, then I cannot complain. However, should the language and mechanisms of this theoretical paradigm distort the picture or otherwise force it into a procrustean schema, then I must object. Once more, if understanding is the goal, however vague such a notion might appear from a distance, then a tolerance of different approaches should be encouraged and what I will call a dictatorial style avoided wherever possible. The possibility of future insight and, ultimately, progress deserves, more, requires such treatment. But now I'm back to common sense.

Acknowledgments: I would like to thank the following people for making valuable comments on many of the issues raised in this paper: Lee Becker, Dwight Bolinger, Richard Cureton, Robert Di Pietro, Gabriella Hermon, F. K. Lehman, Jerry Morgan, Andrew Ortony, Charles E. Osgood, Irmengard Rauch, Saul Wax, and Ladislav Zgusta.

Footnotes:

1. I owe the use of the term "generic", as applied to this case, to Georgia Green (cf. Green, 1976, pl 31).
2. I refer the reader to Rogers (1974) for a transformational account of such sentences as "John seems like he's sick" and "It seems like John's sick", among others. Also, Rogers discusses pertinent data and a number of relevant issues which I neglect here.
3. Another construction which reveals the role played by such words in the language is found in such sentences as "John is devious-looking", "This food is good-tasting", and "Tom lives in a foul-smelling apartment". In each of these cases the relevant predication is (or can be) done by a "pure" copula and the sensory term has become part of the predicate. Thus, whether one says that John looks devious or that John is devious-looking, the word look is providing pertinent sensory information.
4. Dwight Bolinger has brought the following two sentences to my attention:
 - A. This paper seems to be white, according to what I've been told.
 - B. ?This paper seems white, according to what I've been told.
 And as Bolinger comments, "The first (sentence) can include evidence from any source, the second is evidence of the senses. It might seem a little odd for a blind man to say 'This paper seems white', but he could say 'This paper seems to be white'." This sensory contrast between the raised and copular uses of "seem" is just what the analysis proposed here would predict--when seem is working along with the other sensory copulas, it exhibits a sensorial bent.
5. Dwight Bolinger has pointed out to me that one possible reason that gentlemanlike has not caught on is that we already have access to the adjective gentlemanly. And as Bolinger himself adds "...the question then becomes 'Why don't we say ladyly'?'. The answer may well be the sound of it."
6. I owe the example play to Dwight Bolinger (cf. Bolinger, 1972, p. 76f.).
7. I owe this example to Andy Rogers (1974, p. 551) by way of Jerry Morgan's emphasis. Again, the reader is referred to Rogers' account.

8. Among the others who have discussed the issues being raised here are Chomsky (1965), Donaldson (1977, Ch. 1, f. 3), Fillmore (1972), and Hockett (1968). It goes without saying that I urge the reader to consult these sources (perhaps for the nth time) and compare them with what is presented here. And I must continue to pursue this same route.

9. Another germane area of inchoateness concerns the placement of dative expressions in the "sentential" comparative paradigm. Does one say "John seems to me as if he's sick" or "John seems as if he's sick to me" or either? Again, can one say "It seems to me as if John's sick"? In any case, according to the dictates of my grammar, each of these is unacceptable with "like" and one can even go over the edge with "as if": cf. *"It seems as if John's sick to me". Here, too, further efforts are required, if only to reach the point at which one can justifiably throw up his hands.

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THE RELEVANCE OF MORPHOLOGICAL STRUCTURE AND OF STRESS
TO CLITIC PLACEMENT RULE-I IN PASHTO

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In this paper I will consider the rule which places what I am calling the Group-I clitics of Pashto in the proper position in simplex sentences.

The Group I clitics in Pashto include the ergative, accusative, and genitive^{FN} "weak" pronouns; two modal particles; and two adverbial particles. They are listed in (1):

1. Pronominal Clitics

- | | |
|------------------|---|
| me | 1st singular: ergative, accusative, genitive |
| de | 2nd singular: ergative, accusative, genitive |
| ye ^{FN} | 3rd singular and plural: ergative, accusative, genitive |
| am | 1st and 2nd plural: ergative, accusative, genitive |
| mo | 1st and 2nd plural: ergative, accusative, genitive |

Modal Clitics

- | | |
|----|--------------------------------|
| ba | will, might, must, should, may |
| de | should, had better, let |

Adverbial Clitics

- | | |
|----|---------------------------|
| xo | indeed, really, of course |
| no | then |

Group-I clitics are, roughly speaking, placed in "second position" in their clause. However, it will be seen that "second position" is not simply definable since the nature of what fills the first position ranges in size from a construction consisting of several words down to a meaningless initial segment of the verb. Moreover, it will be seen that both stress and the morphological structure of the verb have relevance for the rule which places Group-I clitics. From these somewhat unusual facts, several interesting implications will be pointed out.

Before discussing the placement rule, the following two points need to be mentioned. First, one should remember that Pashto is essentially a SOV language. Second, it should be mentioned that the clitics which I am concerned with here are all enclitics in that they "lean" on the preceding rather than on the following item. The examples in (2), in which one element is progressively removed from the front of the sentence in each item, illustrate. Note that the clitic de, always appears to the right of the

item which it "leans" on.

- 2a. tor de nən xar nə rawali
Tor should today donkey not bring
Tor should not bring the donkey today.
- b. nən de xar nə rawali
today should donkey not bring
He should not bring the donkey today.
- c. xar de nə rawali
donkey should not bring
He should not bring the donkey.
- d. nə de rawali
not should bring
He shouldn't bring it.
- e. rawali de
bring should
he should bring it.

Let us now consider the rule which places Group-I clitics in the proper position in their clause. In the usual instance, Group-I clitics, henceforth just "clitics", are placed after the first major surface constituent of the sentence, regardless of its length or grammatical function. In the examples in (3), notice that the clitics have been placed after the first major surface constituent of the sentence, which may consist of several words or of only one word and which may be serving as subject, object, postpositional phrase, adverb, predicate adjective, negative, or verb, etc. Any change in the position of the clitics will render the sentences in (3) ungrammatical. The clitics are underlined.

- 3a. de kabəl de pohantum rayis, mawEnano, ^Všagərdano,
of Kabul of university president assistants students
You would have indeed met with the president, assistants,

mamurine, as mustaxdimino sara xo ba de katəli wi
officials and employees with indeed would you met were
students, officials and employees of the University of Kabul.
- b. ^Vaga jəga pəzrəpəre sra maŋəy xo ba de xwaxa wi
that tall interesting red building indeed would you liked were
You would indeed have liked that tall interesting red building.
- c. ^Vaga ^Všəl kaləna danga aw xaysta pəgla me nən bya wəlidə
that 20- year tall and pretty girl I today again saw
I saw that 20-year old tall and pretty girl again today.
- d. ^Vxuʂəl aw patang ba ye dər ta rawri
Khoshal and Patang will it you to bring
Khoshal and Patang will bring it to you.

- e. xar me de ^Vgojəl ke wačawə
 donkey I your stable in put
 I put your donkey in the stable.
- f. tə ba ye sabata wugore
 you will him tomorrow see
 You will see him tomorrow.
- g. nən me mele ta byayi
 today me picnic to takes
 Today he takes me to a picnic.
- h. ^Vnaroga ba wi
 sick maybe is
 Maybe he is sick.
- i. satə me
 keep I
 I was keeping it.
- j. nə ba de pezani
 not maybe you knows
 Maybe he doesn't know you.

Thus clitics are placed after the first major surface constituent of the sentence. Here, then, "second position" means the position after the first major surface constituent of the sentence.

We saw in (i) that clitics may be placed after a verb when it is the first major surface constituent. However, in certain verb-initial sentences, the clitics get placed in mid-verbal position--i.e. after a segment which wouldn't be considered a syntactic constituent in the usual sense of the term --rather than after the whole verb. In verb-initial sentences, the determination of whether the clitic is placed after the verb as a whole or whether it is placed after some initial segment of the verb depends on the verb's morphological structure and on the location of the verb's stress.

In discussing clitic placement in this sentence configuration, then, a discussion of the morphological structure and the stress of Pashto verbs will be necessary. According to their morphological structure, Pashto verbs can be divided into three main classes, which I will call Class-I, Class-II, and Class-III.² For convenience of exposition, I will present each class separately along with the operation of the clitic placement rule in that class in sentences where there is no surface constituent preceding the verb.

Let us first consider clitic placement with Class-I verbs when on the surface no constituent precedes the verb stem. Class-I verbs are verbs whose imperative stem consists either of a root alone or of a root plus grammatical suffix(es) marking such things as tense, transitivity, intransitivity, etc. The perfective stem of the Class-I verbs consists of the imperative stem plus the perfective marker prefix wə-. When the perfective

prefix is added to the verb stem, the stress falls on the prefix. The examples in (4)-(7) illustrate.

Imperfective	Perfective
4a. tor sra skunḡāla Tor Sra pinched Tor was pinching Sra.	b. tor sra wāskunḡāla Tor Sra pinched Tor pinched Sra
5a. tor sra təxnawāla Tor Sra tickled Tor was tickling Sra.	b. tor sra wātəxnawāla Tor Sra tickled Tor tickled Sra.
6a. tor gaḡedə Tor danced Tor was dancing.	b. tor wāgaḡedə Tor danced Tor danced.
7a. tor ḡagedə Tor spoke Tor was speaking.	b. tor wāḡagedə Tor spoke Tor spoke.

Now let us look at clitic placement when on the surface nothing precedes a Class-I verb in the sentence. If the aspect is imperfective, the clitics in such instances are placed after the verb, which is stressed on the ultimate or penultimate. The examples in (8) illustrate. The clitics are underlined.

- 8a. mačawāle ye
kissed he
He was kissing you.
- b. mačawf de
kiss you
He is kissing you.
- c. təxnawāla me
tickled I
I was tickling her.
- d. təxnawf me
tickles me
She is tickling me.

If the aspect is perfective, the clitics are placed after the perfective prefix, which is stressed. The examples in (9) illustrate. The clitics are underlined.

- 9a. wā de³ riṭə
you insult
You insulted him.

- b. wə́ de pezaṇdə
you recognized
You recognized him.
- c. wú ba de ʒawrawi
will you bother
He will bother you.
- d. we ba de guri
will you see
He will see you.

Thus in sentences with a Class-I verb not preceded by anything, "second position" means in the imperfective the position after the verb, which is stressed on the ultimate or penultimate, and in the perfective the position after the perfective prefix, which bears stress.

There are a number of Class-I verbs which in the imperfective may be stressed either initially or finally, the two being optional variants. (The perfective, the same as all other Class-I verbs, adds the perfective prefix wə́-, which bears stress.) This subgroup of Class-I verbs includes a small number of verbs whose roots start with a consonant and a number of verbs whose roots start with /a-/. For convenience, I will call the former "consonant-initial stress shift" Class-I verbs and the latter simply "/a/-initial" verbs, since they constitute all the /a/-initial verbs in the language. As far as clitic placement is concerned, the consonant-initial stress shift verbs and the /a/-initial verbs behave differently.

In sentences where on the surface nothing precedes one of these consonant-initial verbs, the clitics are in the imperfective always placed after the verb, regardless of where on the verb the stress is located. Examples are given in (10) and (11).

- 10a. sətəm ye
keep it
I keep it.
- b. sətəm ye
keep it
I keep it.
- 11a. párebdə́ me
beat I
I was beating him.
- b. párebdə́ me
beat I
I was beating him.

In contrast, in sentences where nothing precedes one of the /a/-initial verbs, the clitics are in the imperfective placed either in midverbal or in post-

verbal position: they are placed in midverbal position-- i.e. after the first syllable /a/ -- only when the verb is stressed initially; when the verb is stressed non-initially, the clitics are never placed in midverbal position but are placed after the verb. Examples are given in (12) and (13). Notice that in the (a) sentences, where the verb is stressed initially, the clitics are placed after the first syllable, but that in the (b) sentences the clitics are placed after the verb. In these, the verb is stressed on the last or next to the last syllable.

- 12a. axistələ́ me
 buy I
 I was buying them.

- b. á-me xistələ́
 I was buying them.

- 13a. a^vgustə́ me
 wear I
 I was wearing it.

- b. á-me ^vgustə́
 I was wearing it.

It is important to bear in mind that in such instances the clitics are placed after a phonological segment which constitutes part of the root and which is not a separate morpheme, if defined traditionally as the "smallest individually meaningful element in the utterances of a language" (Hockett, 1967:123). That is, in /a/-initial verbs, just as with all other Class-I verbs, the stem minus affixes is not analyzable into more than one morpheme. For example, the verb forms in (14), which appear here with identifiable affixes removed, each constitute a single morpheme -- the root. Neither /a/- nor the remainder of each form -- /-lut-/, /-^vcaw-/, /-xist-/, and /-ley-/-- is a morpheme. /-lut-/, /-^vcaw-/, etc., do not convey any meaning by themselves, and do not appear independently or as a part of any other lexical items in the language. And, no meaning can be assigned independently to the initial /a-/ in such items, although it appears as the initial syllable of several verbs.⁴

- 14a. alut-
 fly
- b. ^vacaw-
 throw
- c. axist-
 buy
- d. aley-
 smoke

Thus it is clear that in instances like (34b) and (35b) the clitics are placed

after a phonological segment, the first syllable of the verb root, which cannot be considered a morpheme in the usual sense of the term.

From what has been presented above, it can be seen that in sentences with a Class-I verb not preceded by anything on the surface the clitics are sometimes placed in midverbal and sometimes in postverbal position. In the perfective, the clitics are placed after the perfective prefix *wə-*, which is stressed. In the imperfective, where the stress falls on the ultimate or penultimate, the clitics are generally placed in post-verbal position. However, with the /a/-initial verbs, a sub-class of those verbs which may optionally vary the location of the stress, the clitics are in the imperfective placed either in midverbal or in postverbal position. In short, "second position" in such sentences may mean the position after the verb, or the position after the perfective prefix, or the position after an initial stressed segment of the verb root -- /a/.

Let us now look at clitic placement in sentences where on the surface nothing precedes a Class-II verb. Class-II verbs are those verbs whose stems have a derivational prefix preceding the root and grammatical suffix(es). Unlike Class-I verbs, no perfective prefix is added to these verbs in the perfective. Instead, the stress falls on the prefix in the perfective, whereas it falls on the ultimate or penultimate in the imperfective. These points are illustrated by the data in (15)-(17).

	Imperfective		Perfective
15a.	tor ʧelwəhə́ Tor push Tor was pushing it.	b.	tor ʧélwəhə Tor push Tor pushed it.
16a.	tor ʧəkəwəhə́ Tor shake Tor was shaking it.	b.	tor ʧákəwəhə Tor shake Tor shook it.
17a.	tor porewcə́stə Tor carry across Tor was carrying it across.	b.	tor pórewestə Tor carry across Tor carried it across.

In sentences where on the surface a Class-II verb is not preceded by anything, the clitics are placed in the imperfective after the verb. In the perfective they are placed after the prefix of the verb, which bears stress. Items (18)-(20) illustrate. In the imperfective (a) sentences, the clitics are placed in post-verbal position, whereas in the perfective (b) sentences they are placed after the prefix. Any change in the position of the clitics will render the sentences ungrammatical.

	Imperfective		Perfective
18a.	ʧelwəhə́ me push I I was pushing it.	b.	ʧél me wəhə I I pushed it.

	Imperfective		Perfective
19a.	ṭadwāhō <u>me</u> I was shaking it.	b.	ṭāk <u>me</u> wāhā I shook it.
20a.	porewestō <u>me</u> I was carrying it across.	b.	pōre <u>me</u> westā I carried it across.

There are a few verbs which exhibit the behavioral characteristics of Class-II verbs, although they have some of the structural characteristics of Class-I verbs. That is, like Class-I verbs, their stem consists of either a root or a root plus the same grammatical suffix(es) that occur with most Class-I verbs; they do not contain any identifiable derivational prefix. However, like all Class-II verbs, the perfective versus imperfective distinction is made only by the location of stress, and not by the addition of the perfective prefix wā- as in Class-I verbs. The data in (21)-(23) illustrate. The (a) items are imperfective, and the (b) items perfective.

	Imperfective		Perfective
21	21a. layla pācedōla Layla get up Layla was getting up.	b.	layla pācedāla Layla get up Layla got up.
	22a. layla baylodō Layla lose Layla was losing it.	b.	layla bāylodā Layla lose Layla lost it.
	23a. layla bowō Layla take Layla was taking it.	b.	layla bōtā Layla take Layla took it.

When on the surface these verbs are not preceded by anything, the clitics are placed in post-verbal position in the imperfective, stress falling on the last or next to the last syllable of the verb, and are placed in the perfective after the first syllable, which bears stress. The examples in (24)-(26) illustrate. In the (a) sentences, where the verb is imperfective, the clitics are placed in post-verbal position. In the (b) sentences, where the verb is perfective, the clitics are placed after the first syllable of the verb root. Notice that in the former case the stress falls on the ultimate or penultimate whereas in the latter case it falls on the first syllable of the verb. With any change in the position of the clitics, the sentences in (24)-(26) would become ungrammatical.

	Imperfective		Perfective
24a.	pācedōle <u>ba</u> get up <u>would</u> You would be getting up.	b.	pā <u>ba</u> cedāle <u>would</u> You would get up.

	Imperfective		Perfective
25a.	baylod ^š <u>me</u> lose <u>I</u> I was losing it.	b.	báy <u>re</u> lod ^š <u>I</u> I lost it.
26a.	bow ^š <u>de</u> take <u>you</u> You were taking it.	b.	bó <u>de</u> t ^š <u>you</u> You took it.

One should note that the segment after which the clitics are placed in the perfective is not an identifiable morpheme. That is, the stem of these verbs minus suffixes is not analyzable into more than one morpheme. For example, the verb forms in (27), which are the same as those in (24)-(26) but with suffixes removed, each constitute a single morpheme -- the root. *pə-*, *bəy-*, and *bə-* alone convey no separate meaning and none of them appears independently or as a morpheme in any other lexical item in the language. The case is the same with the *-c-*, *-lod-*, and *-t* which make up the remainder of these forms.

- 27a. *pəc-*
b. *bəylod*
c. *bə-*

Thus, with these verbs the clitics are placed right after the first syllable of the root when it bears stress even though that syllable is not a morpheme in the usual sense of the term.

Let us now consider clitic placement in sentences where on the surface nothing precedes a Class-III verb. Class-III verbs, which constitute the vast majority of the verbs in Pashto, consist of an auxiliary verb form plus an adjective, an adverb, or a noun. This non-auxiliary verb component will be called the "initial lexical component" of the verb. Some examples of Class-III verbs are given in (28):

- 28a. *layla doḡay paxa kra*
Layla bread cook do
Layla cooked the bread.
- b. *layla tukrəy porta kawāla*
Layla basket up do
Layla was bringing up the basket.
- c. *layla dərwaṣa pore kawī*
Layla door close do
Layla closes the door.
- d. *layla porta keda*
up became
Layla was getting up.

- e. layla porta kigi
 Layla up becomes
 Layla is getting up.
- f. layla porta kigi
 Layla up became
 Layla got up.

The auxiliary is irregular, there being seven major stem forms, with three additional variations dependent on phonological environment. The choice of form is determined by an intersection of three categories: transitivity (intransitive or transitive); tense (past or nonpast); and aspect (perfective or imperfective). The intransitive auxiliary, whose basic meaning is "to become", appears in four basic forms, as indicated in (29).

29. Intransitive Auxiliary:

	Non-Past	Past
Perfective	-s-	-sw-
Imperfective	-keg-/-eg-	-ked-/-ed-

In the transitive, the auxiliary, whose basic meaning is "to do", appears in three basic forms, as indicated in (30):

30. Transitive Auxiliary:

	Non-Past	Past
Perfective	-k-	-kr̥-
Imperfective	-kaw-/-aw-	

The /k/ of the imperfective auxiliary forms -- i.e. keg-, ked-, and kaw- -- is normally deleted when preceded by a consonant, and is retained if preceded by a vowel. In (31), the imperfective auxiliary is preceded by a vowel and hence the /k/ has not been deleted, whereas in (32) the imperfective auxiliary is preceded by a consonant and hence the /k/ has been deleted.

- 31a. asad ^yganəṁ wobə- kawə1(ə)
 Asad wheat water go
 Asad was watering the wheat.
- b. asad ^yganəṁ wobə-kawi
 asad wheat water do
 Asad was watering the wheat.
- 32a. asad ^yganəṁ tit-awə1ə
 Asad wheat spread do
 Asad was spreading the wheat.

- b. asad ^Vganðm tit-awi
 Asad wheat spread do
 Asad is spreading the wheat.

In the perfective, the stress of Class-II verbs always falls on the initial lexical component -- i.e. on the adjective, adverb, or noun. Examples are given in (33).

- 33a. xušal ^Vxpəla kotəy wrəna kra
 Khoshal his building destroyed did
 Khoshal destroyed his building.
- b. tor ^Vganðm wobó krə
 Tor wheat water did
 Tor watered the wheat.
- c. tor janda pórta kra
 Tor flag up did
 Tor raised the flag.

Moreover, the stress falls on the same syllable where stress would fall if the initial lexical component were used as a nonverbal category. This is illustrated by (34) in comparison with (33). In (34), the adjective, adverb, or noun is used as a nonverbal category; in (33) it constitutes the initial component of the verb form. But in both instances, the stress falls in the same place.

- 34a. aḡa ^Vwrana kotəy de tor da
 that ruined building of Tor is
 That ruined building is Tor's.
- b. wobó rawra
 water bring
 Bring water.
- c. layla pórta laḡa
 Layla up went
 Layla went up.

In the imperfective, the stress of Class-III verbs falls either on the ultimate or penultimate of the verb. The examples in (35) illustrate.

- 35a. asad wəḡawóla
 Asad dry do
 Asad was drying it.
- b. asad portakawóla
 Asad up do
 Asad was taking it up.
- c. asad dubedó
 Asad drown become
 Asad was drowning.

- d. asad duḡigi
 Asad drown become
 Asad is drowning

To summarize the situation with Class-III verbs, in the perfective the stress falls on the initial lexical component of the verb, which bears stress -- i.e. on the adjective, adverb, or noun. In the imperfective, the stress falls on either the ultimate or the penultimate syllable of the verb form.

Now let us look at clitic placement when on the surface nothing precedes a Class-III verb. In the perfective, the clitics are placed after the initial lexical component of the verb, which bears stress. The examples in (36) illustrate. Any change in the position of the clitics will render the sentences ungrammatical.

- 36a. póx me kə
 cook I do
 I cooked it.
- b. wobá me kə
 water I do
 I watered it.
- c. pórtá me kə
 up I do
 I brought it up.
- d. póx ba si
 cook will become
 It will get cooked.
- e. wobá ba si
 water will become
 It will get watered.
- f. pórtá ba si
 up will become
 He will get up.

In the imperfective, where the stress falls on the ultimate or penultimate of the verb form, the clitics are placed in post-verbal position. The examples in (61) illustrate. Any change in the position of the clitics will render the sentences in (37) ungrammatical.

- 37a. tawdawǵla ba me
 warm do would I
 I would be warning it.
- b. tawdedá ba
 warm become would
 It would be getting warm.

- c. tadawúm ye
warm do it
I am warming it.
- d. tawdígi ba
warm become will
It will be warming.
- e. xkatakawǎla ba me
down do would I
I would be bringing it down.
- f. xkatakedá ba
down become would
She would be getting down.
- g. xkatakawúm ye
down do it
I am bringing it down.
- h. xkatakígi ba
down become will
It will be getting down.

Thus in the sentences where on the surface nothing precedes Class-III verbs, the clitics are placed in the perfective after the initial lexical component of the verb, which bears stress. In the imperfective the clitics are placed after the whole verb form, which is stressed on the ultimate or penultimate.

Let us now look at clitic placement in all three verb classes with participial constructions in sentences where on the surface nothing precedes the verb. With all three classes of verbs, in tenses involving a participial construction, the clitics are placed after the participle, which carries stress on the penultimate. The items in (38) illustrate. Any change in the position of the clitics will render the sentences ungrammatical.

- 38a. tarǎlay me da (Class I)
tie I is
I have tied it.
- b. axistǎlay me da (Class I)
buy I is
I have bought it.
- c. telwahǎlay me da (Class II)
push I is
I have pushed it.
- d. paxkǎray me da (Class III)
cook do I is
I have cooked it.

Let me now summarize the above facts about clitic placement in all the above instances of sentences where on the surface nothing precedes the verb. We have seen that, depending on various factors, the clitics are placed either in mid-verbal or in post-verbal position. When the aspect is perfective, with Class-I verbs the clitics are placed after the perfective prefix, which bears the verbal stress; with Class-II verbs the clitics come after the derivational prefix, and, in a few instances, come after a first syllable which is not an identifiable prefix, both of which bear stress in the perfective; and with Class-III verbs, the clitics are placed after the initial lexical component, which always bears stress in the perfective. With all three classes of verbs, when the aspect is imperfective, in which case the stress normally falls non-initially, on either the ultimate or penultimate, the clitics are placed in post-verbal position. However, with a small group of Class-I verbs, the /a/-initial verbs, the clitics may get placed in the imperfective either after the first syllable of the root or after the verb: they may get placed after the first syllable of the root only when it bears stress; when the stress falls elsewhere on the verb, the clitics are always placed in post-verbal position. Recall that the shift of stress in these verbs is optional and does not have any semantic consequence.

Up to this point in describing the placement of Pashto clitics when nothing precedes the verb, I have referred to three different factors -- the morphological structure of the verb, the stress of the verb, and the aspect of the verb. Let us now consider whether in fact all three are relevant to clitic placement. I will show below that the clitic placement rule must indeed make reference to the morphological structure of the verb and to the location of stress, but that it need not refer to the aspect of the verb.

The claim that the clitic placement rule must make reference to the morphological structure of the verb is based on the observation that regardless of whether the other relevant factor is stress or aspect or even both, the placement rule, as we have seen, inserts clitics into the verb after certain morphemes but not after other morphemes. For instance, in Class-I and Class-II verbs, the placement rule may insert Group-I clitics after a prefix, whether grammatical or derivational, and in Class-III verbs after the first lexical component; but it never inserts clitics after a root or suffix. Thus, to account for the facts of the placement of Pashto clitics, at least in mid-verbal position, the placement rule must make reference to the morphological structure of the verb.

I will now consider aspect and stress. The question of whether it is stress, or aspect, or a combination of the two that is relevant to clitic placement in verb initial clauses is a real one because in many instances the two coincide and so either one might be the factor relevant for clitic placement. We will however, see below that of these two factors only stress is relevant to the clitic placement rule.

In many instances either stress or aspect might be considered the relevant factor. Recall the situation in simple tenses in the perfective: with Class-II verbs, the clitics are placed after the prefix, which bears stress, and with Class-III verbs are placed after the initial lexical component of the verb, which bears stress. For convenience, some examples are given in (39).

39a. tel me wəhə
I

I have pushed it.

b. wəbə me kə
water I do
I watered it.

In instances of this sort, either stress or perfective aspect might be considered the relevant factor in directing the placement of the clitic after the prefix.

However, in tenses involving a participial construction (traditionally a perfect tense or compound tense) the clitics are, with these same verbs, placed after the participle form, which is stressed on its next to the last syllable, and are not placed after the prefix or the initial lexical component of the verb form, which does not bear stress. For convenience, examples are given in (40).

40a. tel-wahəle me wa
push I was
I had pushed it.

b. wəbə-kāre me wa
water do I was
I had watered it.

The significant observation is that in both (39) and (40), the aspect is perfective. Yet, in (39) the placement rule has placed the clitics after the prefix or after the initial lexical component of the verb, whereas in (40) the rule has placed the clitics after the participle. Thus, reference to aspect cannot account for the data in both (39) and (40) in a unified manner, whereas reference to stress can. A placement rule which makes reference to stress rather than to aspect will in the instances in (39) correctly place the clitics after the prefix or the initial lexical component of the verb because these are stressed; it will not place the clitics after the prefix in the instances in (40) because the prefix is not stressed; instead it will place them after the participle, which is stressed on the penultimate.

Another piece of evidence which indicates that stress and not aspect is what is relevant to clitic placement is provided by the /a/-initial verbs. We saw that with these verbs the clitics are sometimes placed in mid-verbal position and sometimes in post-verbal position even though the aspect is the same in both instances. The clitics can be placed in mid-verbal position -- i.e. after the first syllable -- only when the first syllable bears stress. Otherwise the clitics are placed in post-verbal position. For convenience, some examples are given in (41) and (42).

41a. axistə me
buy I
I was buying it.

b. á me xistə
I was buying it.

42a. aḡustā me
wear I
I was wearing it.

b. ā me ḡustā
I was wearing it.

Recall that the shift of stress from initial to final is optional in this group of verbs. The alternative locations for the clitics here have nothing to do with aspect. Thus a placement rule referring to aspect cannot account for such instances. However, a rule referring to stress can account for them. It will place the clitics after the initial /a/ of the verb only when stressed. When the initial /a/ of the verb is not stressed, the rule will place the clitics after the verb, which is stressed on the ultimate or penultimate.

In the instances where the stress and the aspect coincide, then, a rule making reference to either of the two could account for the facts of clitic placement in the midverbal and postverbal position. However, in instances such as (40) and (41)-(42), only a rule which makes reference to stress can account for the facts of clitic placement. A rule making reference to aspect cannot account for both items like (39) and those like (40) and (41-42), whereas one making reference to stress can account for both sorts in a unitary manner.

In summary, in sentences where on the surface nothing precedes the verb, the stress of the verb, but not its aspect, is relevant for the clitic placement rule.

Moreover, there is evidence from sentences where something does precede the verb for the fact that stress is relevant for clitic placement. Such instances will be discussed below.

Let us consider one such instance which at least suggests that stress is a relevant factor in clitic placement. There is a set of Pashto morphemes which occur with the verbs. They may occur in all three verb classes before those which indicate movement or transportation and before a few which do not. These morphemes, which cannot be considered prefixes and which I will call deictic preverbs, express the locative goal of the action in terms of person. The deictic preverbs are ra, first person, "here", "where I am", "where we are"; dār, second person, "there", "where you are"; and wār, third person, "there", "where he is", "where they are". There is another set of morphemes which are semantically identical to and formally either identical or quite similar to the deictic preverbs. These morphemes, which occur with only four verbs⁵ and behave in all respects the same as do derivational prefixes in Class-II verbs, I will call deictic prefixes. Examples of the two sets of morphemes are given in (43) and (44).

43. Deictic Preverbs

- a. xuḡal ma ta yaw topak ra-wā legā
Khoshal me to one gun here send
Khoshal sent a gun here to me.
- b. xuḡal ta ta yaw topak dār-wā legā
Khoshal you to one gun there send
Khoshal sent a gun there to you.

- c. xus^Yal asad ta yaw topak wār-wālegə
 Khoshal Asad to one gun there send
 Khoshal sent a gun there to Asad.

44. Deictic Prefixes

- a. xus^Yal ma ta yaw topak rā- worə
 Khoshal me to one gun here cārry
 Khoshal brought a gun here to me.
- b. xus^Yal ta ta yaw topak dar-worə
 Khoshal you to one gun there cārry
 Khoshal took a gun to you there.
- c. xus^Yal asad to yaw topak wār-worə
 Khoshal Asad to one gun there carry
 Khoshal took a gun there to Asad.

Notice that in the first person the two sets of morphemes are formally identical and in the second and third person quite similar. Also notice that both sets of morphemes express the locative goal of the action in terms of person -- e.g. "here", "where I am", etc.

There is, however, an important difference between the deictic prefixes and the deictic preverbs. When the aspect of the verb is perfective, the deictic prefixes, like all derivational prefixes in Class-II verbs, receive stress. In contrast, the deictic preverbs never receive stress regardless of the aspect of the verb. The examples in (45) and (46) illustrate.

45. Deictic Prefixes

- a. patang rā-wór
 Patang here cārry
 Patang was bringing it here.
- b. patang rá-wor
 Patang here cārry
 Patang brought it here.
- c. patang rā-wóst
 Patang here lead
 Patang was leading it here.
- d. patang rá-wost
 Patang here lead
 Patang led it here.

46. Deictic Preverbs

- a. patang rā-legə
 Patang here send
 Patang was sending it here.

- b. patang $\overset{V}{ra}$ w legó
 Patang here send
 Patang sent it here.
- c. patang $\overset{V}{ra}$ țelwahó
 Patang here push
 Patang was pushing it here.
- d. patang $\overset{V}{ra}$ tételwahó
 Patnag heré push
 Patnag pushed it here.

Let us now look at the clitic placement rule and see how it reacts to these two sets of morphemes.

Clitic placement operates with verbs containing a deictic prefix just as it does with any other Class-II verb, whether the derivational prefix is deictic or not. That is, in sentences where on the surface nothing precedes the verb, the placement rule places the clitics after the deictic prefixes when they are stressed. When they are not stressed, the placement rule does not place the clitics after them. Examples are given in (47) and (48). In the (a) sentences, where stress does not fall on the deictic prefix ra-, the clitics are not placed after it. In the (b) sentences, where the stress falls on ra-, the clitics are placed after it.

- 47a. rawóř de
 here carry you
 You were bringing it here.
- b. $\overset{V}{ra}$ de wor
 here you carry
 You brought it here.
- 48a. rawóst de
 here lead you
 You were leading it here.
- b. $\overset{V}{ra}$ de wóst
 here you lead
 You led it here.

In contrast, the placement rule never places Group I clitics after a deictic preverb, which of course does not ever bear stress regardless of the aspect of the verb. The examples in (49) and (50) illustrate. Notice that the clitics are not placed after the deictic preverb ra-. They are placed in the (a) sentences in post-verbal position and in the (b) sentences after the verbal prefix, in one instance the grammatical prefix wa and in the other the derivational prefix țel-. Any change in the position of the clitics will render the sentences ungrammatical.

- 49a. ra legó ba de
 here send would you
 You would be sending it here.

- b. r_a wá b_a d_e legə
 here PERF would you send
 You would send it here.
- 50a. r_a telwəhə́ b_a d_e
 here push would you
 You would be pushing it here.
- b. r_a t_él b_a d_e wahə
 here would you
 You would push it here.

A comparison of (49)-(50) with (51)-(52) below will reveal that the placement rule has placed the clitics in the former in exactly the same position as it has placed them in the latter where the same verbs are not preceded by the deictic particles.

- 51a. legə́ b_a d_e
 send would you
 You would be sending it.
- b. wá b_a d_e legə
 PERF would you send
 You would send it.
- 52a. t_élwahə́ b_a d_e
 push would you
 You would be pushing it.
- b. t_él b_a d_e wahə
 would you
 You would push it.

It would seem, then, that the placement rule treats the deictic preverbs, which never receive stress, as if they were not there.

In summary, the placement rule places clitics after a deictic prefix only when it bears stress. When it does not bear stress, the placement rule does not place clitics after it. This contrasts with the situation with deictic preverbs: the placement rule never places clitics after a deictic preverb, which does not ever bear stress. In short, in determining "second position", the placement rule treats the stressless deictic preverbs as if they were not there in that when on the surface nothing else precedes the verb it ignores them and places the clitics in mid-verbal or post-verbal position. This strongly suggests once again that stress is a relevant factor for the clitic placement rule.

Let us now look at some other items which are similar to the deictic preverbs in that they are always associated with the verb yet cannot be considered prefixes. These are the negative particles nə (used for ordinary negatives) and mə (used for negative commands).

- 53a. nǝ gadegǝm
not dance
I don't dance.
- b. mǝ gadega
not dance.
Don't dance.

The preverbal negative particles, in contrast to the deictic preverbs, always carry the main stress of the negative-plus-verb construction. The examples in (54)-(57) illustrate.

- 54a. gadedǝla
Shǝ was dancing.
- b. nǝ gadedǝla
She was 'not dancing.
- 55a. gadǝgi
Shǝ is dancing
- b. nǝ gadǝgi
She is 'not dancing.
- 56a. pǎcega
Get up!
- b. mǝ pacega
Don't get up!
- 57a. gadǝga
Dǎnce!
- b. mǝ gadega
Don't dǎnce.

In sentences where on the surface nothing precedes the negative particles, the clitics are always placed after the negative particles. The items in (58) illustrate. Any change in the position of the clitics will render the sentences ungrammatical.

- 58a. nǝ ba gadigi
not should dance
You should not dance.
- b. nǝ ba ye pezani
not maybe him know
Maybe you don't know him.
- c. mǝ me mačawa
not me kiss
Don't kiss me.

- d. mō me ḡawrawa
 not me bother
 Don't bother me.

Thus, although both the negative particles and the deictic preverbs are associated with the verb, in sentences in which only these items precede the verb, the clitic placement rule places clitics only after the stressed negative particle and never after the unstressed deictic preverb.

Once again this strongly suggests that stress is relevant to the clitic placement rule.

Second, there is even clearer evidence from sentences where other sorts of elements precede the verb for the fact that stress is relevant for clitic placement. This evidence is provided by the two sets of data discussed below.

We saw at the beginning of our discussion of the clitic placement rule that in the usual instance clitics are placed after the first major surface constituent of their clause. However, it will be seen below that this is true only when that constituent bears at least one main stress. If the first major surface constituent of the clause does not bear any main stress, the clitics cannot be placed after it. In such instances, just as in instances where nothing precedes the verb, the clitics are placed in either mid-verbal or post-verbal position.

The first set of data which indicates that the placement rule will not place clitics after the first major constituent if the constituent does not bear stress is provided by prepositional and postpositional phrases and by their proforms. Before looking at the data, a couple of comments on Pashto's prepositional phrases and postpositional phrases is in order at this point. The stress of a prepositional phrase is always carried by the NP and never by the preposition. A preposition may occur only with a full NP or strong pronoun but not with a clitic pronoun as the object of preposition. (Only postpositions may occur with clitic pronouns.) Similarly, the stress of a postpositional phrase consisting of a full NP or a strong pronoun plus a monosyllabic postposition always falls on the noun or pronoun and never on the postposition.

Now look at the data in (59)-(60). In (59a), the first major constituent is a prepositional phrase consisting of a preposition pō "with" plus a full NP rasōy "rope". The first major constituent in (60a) is a postpositional phrase consisting of a postposition na "from" and a full NP Layla. In the corresponding (b) and (c) sentences in (59-60), the first constituents are the proforms pe "with it" and tre "from her" respectively. These proforms are underlyingly prepositional and postpositional phrases with third person objects. Hence I will call them Pro-Pre/Postpositional Phrases (Pro-PPPs). They never bear stress.

Let us now compare the facts of clitic placement in the (a) sentences versus the (b) and (c) sentences. Notice that in the (a) sentences the clitics have been placed after the first major constituent of the clause. In them,

at least one morpheme, the noun or strong pronoun, of the first constituent bears main stress. In contrast, in the (b) and (c) sentences the clitics have not been placed after the first constituent. They have been placed in the mid-verbal or post-verbal position. The first constituent of the clause, the Pro-PPP, does not of course bear stress.

59a. pà rasóy ba ye wátari
with rope will it PERF tie
He will tie it with the rope.

b. pe wú ba ye tari
with it PERF will it tie
He will tie it with it.

c. pe tarí ba ye
with it tie will it
He will be tying it with it.

60a. laylá na de axistə
Layla from you buy
You were buying it from Layla.

b. tre á de xistə
from her you
You were buying it from her.

c. tre axistə de
from her buy you
You were buying it from her.

Thus the placement rule places clitics after the first major constituent of their clause only when that constituent contains at least one main stress. When the first constituent of the clause does not bear a main stress, the placement rule ignores it in determining "second position" and places the clitics in mid-verbal or post-verbal position. It seems clear that stress is relevant for the clitic placement rule. It is interesting to notice that in the (b) and (c) sentences of (59) and (60), where the verb is preceded by an unstressed constituent, the placement rule has placed the clitics in exactly the same position as in (61) and (62) (a-b), where the verb is preceded by nothing. This means that the placement rule treats the unstressed constituent in (59) and (60) as if it was not there.

61a. wú ba ye tari
PERF will it tie
He will tie it.

b. tarí ba ye
tie will it
He is tying it.

62a. á de xistə
you
You were buying it.

- t. axistǝ de
 buy you
 You were buying it.

Another piece of evidence concerning the sensitivity of the clitic placement rule to stress is provided by the instances in (63)-(65). Notice that the first major constituent in all of these sentences is a postpositional phrase. However, in the (a) sentences the enclitics are placed after the first major constituent but in the (b) sentences are not. Instead they are placed in either the mid- or post-verbal position. The only difference between the postpositional phrases in the (a) sentences and the postpositional phrases in the (b) sentences is that in the former case they contain a full NP or a strong pronoun whereas in the latter case they contain a weak pronoun. (The latter sort I will call "weak pre-/postpositional phrases" or WPPs.) The full NPs and the strong pronouns in the (a) sentences bear stress, but the weak pronouns ra, dǝr, and wǝr in the (b) and (c) sentences never bear stress. A monosyllabic postposition such as ta does not ever bear stress either, regardless of whether it occurs with a full NP or strong pronoun or with a weak pronoun. Thus the first major constituent, i.e. the postpositional phrase, in the (a) sentence bears a main stress and hence the placement rule has placed the clitics after it. However, the first major constituent in the (b) and (c) sentences, also a postpositional phrase, does not bear any main stress, and the clitic placement rule has not placed the clitics after it. Instead it has placed them in mid-or post-verbal position, depending on where the verb stress falls. In the (b) and (c) sentences, the appearance of the enclitics in pre-verbal position would render them ungrammatical.

- 63a. mǝ ta de prǝxodǝ
 me for you left
 You left it for me.
- b. ra ta prǝ de xodǝ
 me for you
 You left it for me.
- c. ra ta prǝxodǝ de
 me for left you
 You were leaving it for me.
- 64a. tá ta ba ye prǝgdi
 you for may it leave
 He may leave it for you.
- b. dǝr ta prǝ ba ye di
 you for may it
 He may leave it for you.
- c. dǝr ta prǝgdi ba ye
 you for leave may it
 He may be leaving it for you.
- 65a. patáng ta ba ye prǝgdi
 Patang for may it leave
 He may leave it for Patang.

- b. wār ta pré ba ye di
 him for may it
 He will leave it for him.
- c. wār ta prigdí ba ye
 him for leave may it
 He may be leaving it for him.

Notice that in (63)-(65) (b-c), where the first major constituent does not bear stress, the clitics are placed in exactly the same positions as in (66)-(68) (a-b), where on the surface nothing precedes the verb.

- 66a. pré de xodə
 you
 You were leaving it.
- b. prexodə́ de
 leave you
 You left it.
- 67a. pré ba ye gdi
 may it
 He may leave it.
- b. prigdí ba ye
 leave may it
 He may be leaving it.
- 68a. pré ba ye gdi
 may it
 He may leave it.
- b. prígdí ba ye
 leave may it
 He may be leaving it.

Once again, the clitic placement rule seems to react to an unstressed constituent the same as to zero.

From the above sets of data, one can conclude that clitics are placed after the first major surface constituent only when it bears at least one main stress; when it is unstressed, the clitics are placed in the subsequent eligible position. This conclusion is further validated by sentences containing more than one unstressed surface constituent before the verb. Very often the verb may be preceded by both a Pro-PPP and a WPP. Nevertheless, the clitic placement rule will still place the clitics in mid-verbal or post-verbal position rather than after either unstressed constituent. In (69), the verb is preceded by one WPP and one Pro-PP. Notice that the clitics are placed either in mid-verbal or in post-verbal position, rather than after the WPP or Pro-PPP.

- 69a. rə ta pe gandə́' de
 me for by him sew you
 You were having him sew it for me.

- b. ra ta pe wá de gándá
me for by hem PERF you sew
You had him sew it for me.
- c. ra ta te rawré ba ye
me to from him bring would it
You would be bringing it to me from him.
- d. ra ta te rá ba ye wra
me to from him would it wra
You would bring it to me from him.

If moreover there is present also a deictic preverb, which never bears stress, the placement rule will ignore the WPP, the Pro-PP, and the Deictic Preverb all three and will place the clitics in mid-verbal or post-verbal position. The items in (70) illustrate. Any change in the position of the clitics will render the sentences in (70) ungrammatical.

- 70a. ra ta te ra škawá de
me for from it here pick you
You were picking it for me from it (and bringing it) here.
- b. ra ta te ra wá de škawá
me for from it here PERF you pick
You picked it for me from it (and brought it) here.
- c. ra ta te ra tolawál de
me for from it here collect you
You were collecting them for me from it (and bringing them) here.
- d. ra ta te ra tol de král
me for from it here you
You collected them for me from it (and brought them) here.

If the verbs in (70) are replaced by a verb containing a prefix, and if the prefix of the verb does not bear stress, the placement rule will ignore the prefix also and place the clitics after the verb stem, which is stressed on the ultimate or penultimate. The examples in (71) illustrate. Any change in the position of the clitics will render the sentences ungrammatical.

- 71a. ra ta te ra prewestá de
me for from it here bring down you
You were bringing it down here for me from it.
- b. ra ta te ra porewestá de
me for from it here carry across you
You were carrying it across here for me from it.

The examples given in (69)-(71) show that the clitic placement rule, in determining a "second position" may ignore or skip as many consecutive unstressed items as may possibly arise.

The final sort of evidence indicating that stress is relevant for the

clitic placement rule comes from pairs of instances where a WPP (weak pre-/postpositional phrase) sometimes does and sometimes does not bear stress. Recall that a postpositional phrase consisting of a weak pronoun r_a, d_ar, or w_ar, plus a monosyllabic postposition never bears stress. However, if the postpositional phrase consists of a weak pronoun plus a disyllabic postposition, the postposition may bear stress under certain conditions. That is, when a WPP containing a two-syllable postposition occurs with certain forms of the copula, which are also normally unstressed, the postposition may bear stress. Items (72) and (73) illustrate.

72. r_a sará da
 me with is
 It is with me. (I have it)

73. r_a kará da
 me at-house-of is
 It is in my house.

Now let us examine the operation of clitic placement in sentences of this sort. Consider (74) and (75). Notice that, contrary to the situation with all similar previously presented examples, the clitic placement rule does place the Group I clitics after a postpositional phrase containing a weak pronoun, but it is a postpositional phrase with a stressed element.

74. r_a sará de wi
 me with let be
 Let it be with me.
75. r_a kará de wi
 me at-house-of let be
 Let it be in my house.

These facts indicate that the clitic placement rule ignores a postpositional phrase, the first major constituent of the sentence, only when neither of its components bears stress. When one of its components does bear stress, whether the NP or the postposition, the placement rule does not ignore it in defining "second position," and does place clitic after it.

A comparison of the preceding with the following examples yields further significant evidence that the clitic placement rule is sensitive to stress. In instances like (72)-(75) the stress may occur either on the postposition or on the copula, depending on the focus. In (76) and (77), the stress falls on the copula rather than on the postposition. Notice that in these instances the Group-I clitic has been placed after the copula, which carries the stress.

76. r_a sara wí de
 me with be let
 Let it be with me.
77. r_a kara wí de
 me at-house-of be let
 Let is be in my house.

Thus in sentences consisting of identical items, the placement rule clearly takes stress into account.

Thus I conclude that the clitic placement rule never places clitics after the first major constituent of a clause if that constituent is unstressed. When the verb is preceded by such a constituent, the clitic placement rule ignores it and places the clitics either in mid-verbal or post-verbal position, depending on the location of the verb stress, just as if the pre-verbal constituent were not present. Unstressed constituents, then, don't "count" for the purposes of clitic placement. Clearly, stress is relevant for the clitic placement rule.

Clitics in Pashto are placed, then, in "second position." However, the nature of what fills the first position may be quite different in different instances. That is, what clitics are placed after ranges in size from the first major surface constituent of the clause, which may consist of one or several words, to the first lexical component of the verb of the prefix of the verb, and even to a meaningless phonological segment --the initial syllable of the verb root --in some instances. An item of any of these three types counts as filling first position for the purposes of clitic placement only if it is stressed. If it is unstressed, then for the purposes of clitic placement it does not count and the position of the clitics is determined just as if the item weren't there. That is, the clitics are placed in the subsequent eligible position. Based on all the preceding observations, the Clitic Placement Rule-I can be formulated as follows: Group-I clitics are placed after the first major surface constituent that bears at least one main stress --where "major constituent" may be directly dominated by S, VP, or V.

These facts have some interesting implications.

First, the fact that the placement rule places clitics after the first lexical component or the prefix of the verb, but not after any other morpheme such as the root or a suffix, shows that the placement rule is sensitive to the morphological structure of the verb. This observation, especially the fact that the placement rule places the clitics after the prefix of the verb, indicates that here a syntactic rule is operating on the basis of elements smaller than the word, which is usually the smallest entity in the realm of operation of syntactic rules.

More important is the fact that here the same syntactic rule, clitic placement, operates sometimes on the basis of a constituent directly dominated by S in quite parallel manner. We saw that in sentences where on the surface no stressed item precedes the verb, the placement rule places clitics after the prefix or the first lexical component of the verb. This is the case except when these items are unstressed, in which case the placement rule places clitics in the subsequent eligible position. In parallel manner, in all other sorts of sentences, the placement rule places clitics after the first major constituent, except when that item is unstressed, in which case it places the clitics in the subsequent eligible position. Thus, in sentences where on the surface no stressed item precedes the verb, the placement rule treats a constituent dominated directly by V in the same fashion as it treats a constituent dominated directly by S in the non-verb-initial sentences.

More peculiar apparently are the instances where the placement rule

places the clitics after a meaningless phonological string -- the initial syllable of the verb root. In such instances the segment after which the clitics are placed is a phonological segment which cannot even be considered a "morpheme", defined as "the smallest individually meaningful element...." (Hockett 1967:123).

From these facts, we can conclude that the same syntactic rule, clitic placement, operates on the basis of three different kinds of entities. In some instances it operates on the basis of a constituent dominated by S. In other instances it operates on the basis of a constituent dominated by V. And in yet some other instances it operates on the basis of a mere phonological segment, a segment which cannot be considered a constituent at any level, in the usual sense of the term.

These facts raise some questions about the nature of "syntactic constituent". If "syntactic constituent" is defined on the basis of behavior, then in Pashto a prefix or sometimes even a meaningless segment which behaves like a prefix must be considered a "syntactic constituent." The only alternative is to say that syntactic rules sometimes operate on the basis of non-syntactic categories --i.e. morphological or phonological segments.

Third, it has generally been assumed that a syntactic rule need not make reference to stress, especially of the phrase or word. In this paper, we have seen that in Pashto clitics are not placed after segments, morphemes, or constituents that do not bear stress, although when the same kind of items do bear stress, the clitics are placed after them. It is clear, then, that the clitic placement rule is sensitive to stress --i.e. that the structural description of the clitic placement rule must include reference to stress. This, in turn, has the further implication that stress must be assigned prior to the application of clitic placement in Pashto.

NOTES

¹The "first major" constituent is normally directly dominated by S. However, in Pashto, a sentence may often consist of only a VP or a V, so that S uniquely dominates these. Because of this characteristic, if a sentence consists of only a VP, then the "first major" constituent may be dominated directly by VP and only indirectly by S; and if a sentence consists of only a V, then the "first major" constituent is dominated directly by V and only indirectly by S.

²The classification of verbs given here is my own.

³Actually this de would raise to di due to the operation of a vowel harmony rule, but for convenience here I am giving it in its basic form.

⁴Darmesteter (1888-90) holds that historically that /a/ was a prefix. However, synchronically it cannot be considered a prefix in the usual sense of the term.

A MATTER OF SCOPE: MCCAWLEY VERSUS POSTAL
ON THE ORIGIN OF NOUN PHRASES

Peter Cole

1. The Ambiguity.

In his influential paper "Where Do Noun Phrases Come From?", McCawley (1970 and 1971¹) noted the ambiguity of the underlined noun phrases in sentences like (1)-(3).²

- (1) John said that the woman who shares an office with Bill is very intelligent.
- (2) John said that the woman who shares an office with Bill is an anthropologist.
- (3) John said that the woman who shares an office with Bill is the anthropologist who received the Meade Award.

Sentences (1)-(3) are ambiguous in the same way. They are appropriate either as a report of John's having said (4)

- (4) The woman who shares an office with Bill is very intelligent an anthropologist.

the anthropologist
who received the
Meade Award

or (5).

- (5) Martha Anderson is very intelligent an anthropologist the anthropologist
who received the Meade
Award

In the former case, John is the source of the description, while in the latter case, the speaker reports John's statement of (5) by (1)-(3).

McCawley presents sentences like (6) as further instances of the same ambiguity.

- (6) Tom says that the man who killed Kennedy didn't kill Kennedy.

Note that when Tom is taken as having supplied the italicized description he must be understood to have made a contradictory statement:

- (7) The man who killed Kennedy didn't kill Kennedy.

But if the source of the description is the speaker of (6), Tom need not be guilty of a contradiction. He might well have said (8),

- (8) Lee Harvey Oswald didn't kill Kennedy.

which the speaker of (6), convinced that Oswald was the assassin, reports as (6).

In addition to sentences with overt definite descriptions like (1)-(3), McCawley proposes that the ambiguity of (9) has the same origin as that of (1)-(3) and (6).

- (9) Fred thinks that he's richer than he is.

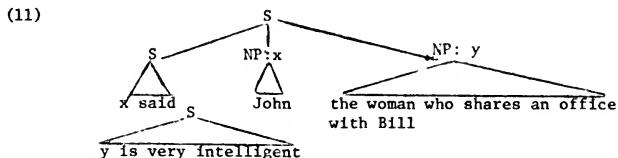
The sources of (9) are claimed to be similar to those of (10).

- (10) Fred thinks that the degree to which he is rich is greater than the degree to which he is rich.

That is, the ambiguity of (9) is reduced to the sort of ambiguity already encountered in (1)-(3) and (6).

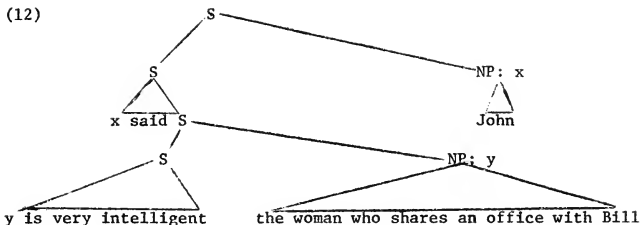
2. A Scope Analysis

McCawley proposes an analysis of the sentences discussed in the previous section in terms of relative scope. He suggests that when the speaker is the source of the description, the description originates as the sister of the matrix clause as in (11).³



In (11) the fact that the speaker is the source of the description is represented by the placement of the description in a position out of the scope of (that is, not commanded by) the verb *said*.

When John is the source of the description, NP: y is placed within the scope of *said*, as in (12).



The central feature of McCawley's analysis is that the differing interpretations of sentences like (1), (2), (3), (6), (9) and (10) are analyzed in terms of the scope of the description and a predicate (e.g. say, believe).⁴ Whether or not the description is commanded by the predicate determines whether the description is taken to be that of the subject of the sentence (John in (1)) or of the speaker.

3. Another Scope Analysis

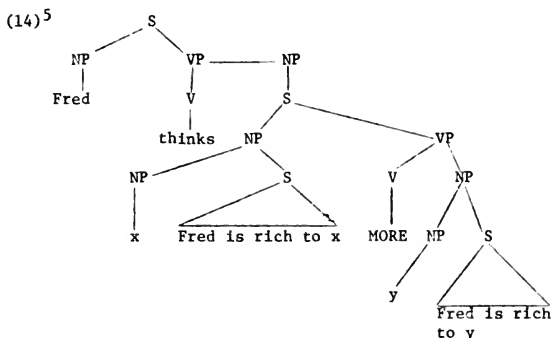
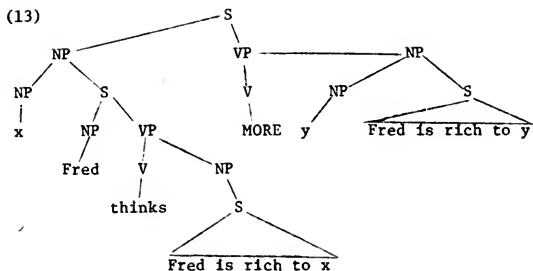
A very different relative scope analysis is found in Postal (1974). Postal proposes that the ambiguity found in sentences like (6) and (9) is a scope ambiguity. But he contends, the differing interpretations are not due to the relative scope of the description and a predicate of the appropriate type. Rather, they are due to the scope of a verb of propositional attitude etc. and a covert verb that does not appear in surface structure. Postal's analysis has some intuitive plausibility for comparatives, so I will use the analysis of (9) to illustrate his approach.

It will be remembered that (9) was presumed by McCawley to derive from a source similar to that of (10).

(9) Fred thinks that he's richer than he is.

(10) Fred thinks that the degree to which he is rich is greater than the degree to which he is rich.

Thus, (9) is taken to contain a covert predicate is greater than. Postal takes the ambiguity of (9) to be due to the relative scope of think and is greater than, the latter predicate represented by MORE in Postal's article. Example (13) is how Postal would represent the non-contradictory reading of (9). Example (14) represents the contradictory reading.



Trees (13) and (14) do not differ significantly from the underlying structures needed by McCawley. What does differ is the aspect of semantic structure taken to be responsible for the ambiguity of (9). According to McCawley, the contradictory reading results from the subordination of the description *y* [Fred is rich to *y*] to the verb think, while according to Postal, the contradiction results from the subordination of the comparative predicate MORE to think. The relative scope of the description and think are, in Postal's analysis, irrelevant.

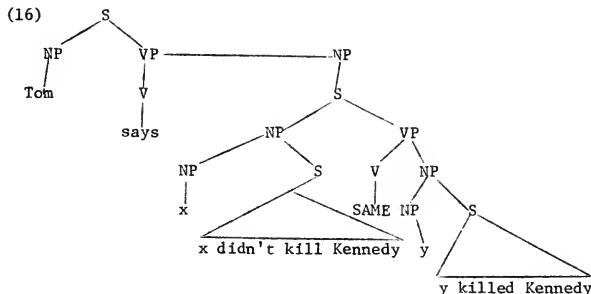
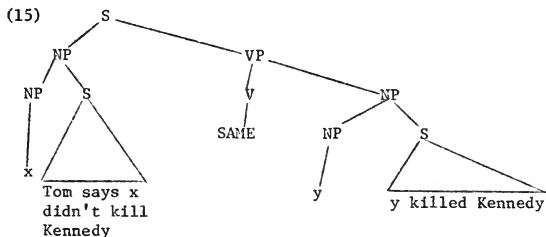
Thus, the most important differences between McCawley's and Postal's analyses are the rules interpreting the structures. Although neither Postal nor McCawley provides an explicit formal semantics for his analysis, it is clear that McCawley's and Postal's rules of semantic interpretation (in the logical useage of the term) would be sensitive to different things: McCawley's to the relative scope of a predicate and a description, and Postal's to the relative scope of two predicates.

4. Postal's Analysis of Definite Descriptions

I would like to turn now to Postal's treatment of sentences like (6).

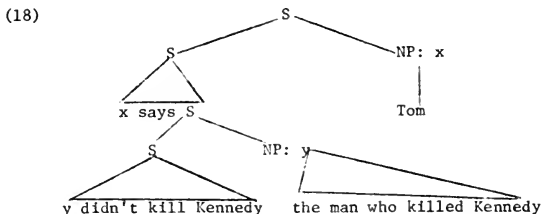
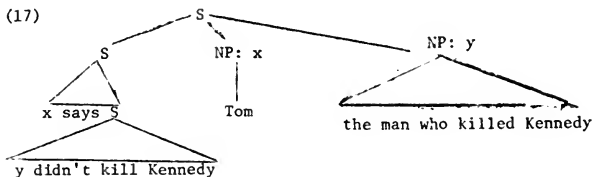
- (6) Tom says that the man who killed Kennedy didn't kill Kennedy.

Postal assimilates the ambiguity of (6) to that of (9) by proposing that (6) contains a covert predicate analogous to MORE in (9). In the case of (6), the predicate is SAME, defined by Postal as "a binary predicate expressing extensional identity. (p. 382)" On the non-contradictory reading, (6) would be represented as (15), and on the contradictory reading as (16).



Before discussing whether Postal's analysis is tenable when extended to definite descriptions (I think it is not), I would like to point out the essential role played by SAME in Postal's analysis. It will be remembered that Postal's analysis of comparatives like (9) differed from that of McCawley in that according to Postal the ambiguity derived from the relative scope of MORE and think. For McCawley MORE played no such role in the ambiguity. But both Postal and McCawley would posit an element like MORE in logical structure.

Consider now the structures that McCawley would posit as underlying (6). The non-contradictory reading is represented as (17) and the contradictory reading as (18).



Structures (17) and (18) do not differ in the same way that (13) and (14) differ. Examples (13) and (14) differ in two ways: (1) in terms of the relative scope of think and the description; (2) in terms of the relative scope of think and MORE. Thus, (13) and (14) were appropriate input for both McCawley's and Postal's rules of semantic interpretation.

This is not the case with regard to (17) and (18). For (17) and (18) differ in terms of the relative scope of a predicate (says) and description (the man who killed Kennedy). But they do not differ in terms of the relative scope of says and a predicate analogous to MORE. Thus, for Postal, (17) and (18) would receive the same interpretation. Some predicates like SAME must be introduced as in (15) and (16) to allow Postal's rules of semantic interpretation to account for the readings of (6). On the assumption that (6) and (9) are instances of the same ambiguity, Postal's analysis can be falsified if it can be shown that the hypothesis of a predicate like SAME is generally untenable.

5. A Syntactic Argument for Postal's Hypothesis

In a paper presented at the 1975 meeting of the Chicago Linguistic Society, Reinhart (1975) points out that the logical structures posited by Postal appear to predict different readings from those actually found. Reinhart's arguments are straightforward and convincing, and call into doubt the semantic adequacy of Postal's analysis. She does not, however, discuss Postal's syntactic arguments. There are certain

syntactic data which Postal interprets as supporting his analysis. I will argue that the support is illusory. I shall go into some detail in this matter because, in the absence of semantic motivation, Postal's proposed underlying structures can only be worthy of serious consideration if they are strongly supported on purely distributional grounds. I shall try to show that they are not.

Postal contends that "the distribution of ... ambiguities is controlled by syntactic islands in the sense of Ross 1967 and later work. (p. 383)" According to Postal, only the contradictory interpretation is possible in an island. In (19a) the italicized structure is a sentential subject, (19b) the complement of a noun head.

(19)a. That Mary was older than she was was assumed by Jack.

(19)b. Melvin believes the claim that Mary is older than she is.⁶

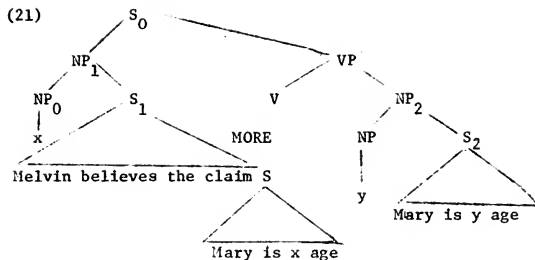
Although, Postal claims, only a contradictory reading of (19a) is possible, both readings may be expressed by (20), where the sentential subject has been extraposed and hence is not an island.

(20) It was assumed by Jack that Mary was older than she was.

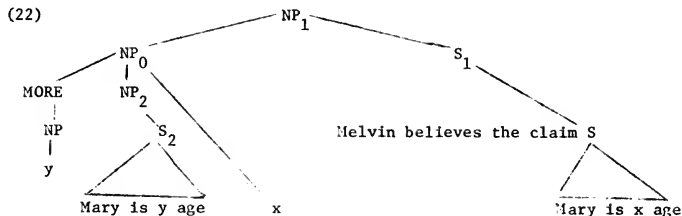
Similar distributions of readings are alleged to hold for other island structures.

Postal considers these data to be evidence in favor of the underlying structures he hypothesized for two reasons. First, he assumes that island violations always involve movement into or out of an island structure. Second, in the derivation of comparatives (including what for Postal are covert comparatives like (6)) a lowering rule applies that cyclically lowers the main verb and certain associated material into restrictive relative clauses, thereby converting what was underlyingly a subordinate clause into a superficial main clause. The lowering rule is sensitive to islands.⁷ Thus, it blocks the lowering of a higher predicate into island structures. As a result, the only reading possible is one where the material in the island originated in the island. This is claimed to explain the non-ambiguity of material in islands.

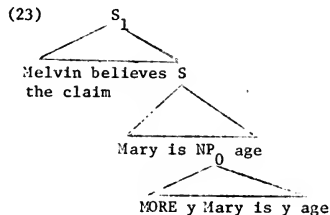
An illustration might be useful for the sake of clarity. Let us compare the derivations for the non-contradictory and contradictory readings of (19b) in order to see how, according to Postal, the non-contradictory reading is blocked. The non-contradictory reading is derived from a logical structure along the lines of (21).



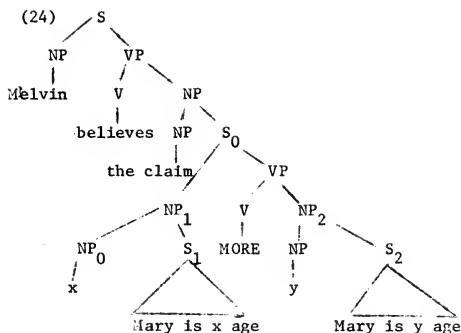
According to Postal, the matrix verb MORE and the associated material NP₂ would be lowered into NP₁ in two stages.⁸ The output of the first stage of lowering is illustrated in (22). In the first stage MORE and NP₂ are lowered into NP₀.



In the first stage of lowering no island violation takes place. Such a violation does occur in the second stage, in which NP₀ is lowered into S₁ replacing the index x. Note that this instance of x is in an island. Thus, (23) is blocked.



In contrast to (21)-(23), the contradictory reading of (19a) would not involve an island violation. The underlying structure would be roughly (24).



The first stage in lowering involves the lowering of MORE and NP₂ into NP₀. In the second stage, NP₀ is substituted for x in S₁. In the structure derived from (24) this does not entail an island violation because MORE in underlying structure is already inside the island. Note that lowering takes place within the sentential complement of the claim, and, therefore, does not require movement into the island.

We have seen that according to Postal it is matrix verbs (e.g. MORE) that are the victims of lowering rules. Lowering accounts for island violations. Thus, some predicate like MORE (i.e. SAME) must be present underlyingly in sentences like (6) to account for the alleged non-ambiguity of sentences like (25),

- (25) John believes the claim that the man who killed Kennedy didn't kill Kennedy.

which, Postal would contend, can have only a contradictory reading.

6. The Irrelevance of Islands⁹

Postal's island argument rests on the assumption that island violations indicate that some material has been moved into or out of an island structure. The material which Postal claims has been moved in the (unattested) non-contradictory readings of example (19) is the predicate MORE. Because island constraints block the non-contradictory reading of instances of the ambiguity involving definite descriptions (e.g. (25)), consistency requires that sentences like (25) and (6) involve some predicate analogous to MORE. SAME is such a predicate. Thus, a covert predicate, posited in order to account for the ambiguity of (6) by means of Postal's rule of semantic interpretation, is claimed to be necessary in order to account for the absence of the ambiguity in islands.

Postal's argument is vulnerable because his fundamental assumption regarding the relationship between movement and island violations is wrong. In fact, island violations do not indicate that something was

(29) Relative Clauses

*Zhe jiushi [[women dou hen zunjing $\left\langle \begin{smallmatrix} \emptyset_1 \\ \emptyset_1 \end{smallmatrix} \right\rangle$ ta₁] xihuan $\left\langle \begin{smallmatrix} \emptyset_1 \\ \emptyset_1 \end{smallmatrix} \right\rangle$ ta₁ de] neige
 this is we all very respect he like she RM that
 ren₁ de] neiwei nulaoshi₁.
 person RM that woman teacher
 'This is the woman teacher that we all respect the man who likes her.'

(30) Conjoined Noun Phrase

*Zhe jiushi [wo zuotain kanjian $\left\langle \begin{smallmatrix} \emptyset \\ \emptyset \end{smallmatrix} \right\rangle$ ta₁] gen Lao Wang de] neige ren.
 this is I yesterday see $\left\langle \begin{smallmatrix} \emptyset \\ \emptyset \end{smallmatrix} \right\rangle$ he and Lao Wang RM that person
 'This is the man that I saw and John yesterday.'

The islands in (23) through (30) block the application of relativization even when the pronoun is retained. Thus, the presence of an island violation does not necessarily indicate that a movement or deletion has occurred.

Another language in which island violations are found, but in which no movement or deletion can be supported is Hindi. Hindi allows a number of relativization strategies. What is relevant to this paper is that in one of the strategies the relative clause appears to the left of the head and the head is deleted under identity with the relativized noun phrase.¹³ This is illustrated schematically in (31a). An example is given in (31b).

- (31)a. NP[S[...NP_i...]S NP_i] NP NP[S[...NP_i...]S \emptyset_1] NP
 b. NP_S[jis lərke ne vəh kitab bheji thi]_S vəh (lərka \emptyset)]_{NP}
 that boy ag.m. that book sent had corr. boy
 kəl aya tha.
 yesterday come had
 'The boy who sent that book had come yesterday.'

This type of relativization in Hindi shares with Mandarin the property that a nominal token of the relativized noun phrase may appear in surface structure.

Consider now the effect of relativization into islands using this retention strategy. Despite the fact that neither movement nor deletion has taken place, relativization is ungrammatical into complements of noun heads, non-participial relative clauses and conjoined noun phrases. This is illustrated below.

(32) Relative Clauses

$S_1 [S [jis\ lərke_i\ ne\ jo\ kitab_j\ bhejī\ thī]_S\ vəh\ \emptyset_i]$
 that boy ag. m. rel.m. book sent had corr.
 kə1 aya tha] $S_1 vəh\ \emptyset_j\ kho\ gəī.$
 yesterday come had corr. lost is
 'That book which the boy who had sent had come yesterday is lost.'

(33) Complements of Noun Heads

$S_1^* [jis\ kar_i\ ko_{S_1}\ yəh\ bat\ səc\ h\ S_2 [ki\ gopal\ ne\ xərid_i]_{S_2}]_{S_1}$
 rel.m. car this news true is that Gopal ag.m. bought
 vəh \emptyset_1 sundər hē.¹⁴
 corr. pretty is
 'The car which the news that Gopal bought is true is pretty.'

(34) Conjoined Noun Phrases

$S^* [jis\ sōfa_i\ unhōne\ mēz\ kursī\ ɔr\ \emptyset\ ke\ bīc\ mē\ r\ kha\ hē]_S$
 rel. sofa they-ag. table chair and of between placed aux.
 vəh \emptyset_1 purana hē.¹⁵
 corr. sofa old is
 'The sofa which they have placed a table between a chair and is old.'

Thus, island violations in Hindi relativization involve neither movement nor deletion.

Question formation in Hindi also shows that island violations can occur without movement or deletion.¹⁶ In Hindi questions are formed by substituting a question word for the questioned constituent. No movement is involved. A pattern of island violations like that seen in (32)-(34) is found:

(35) Non-Participial Relative Clauses

*Jan us lərki₁ ko janta hē [jo \emptyset kiske sath kam
 John correl. girl postpos. knows rel.m. whom with work
 kərti hē]?
 does
 'John knows the girl who works with whom?'

(36) Complements of Noun Heads

*yāh bāt sēc hē_{S₁} [ki gopal ne kya xarida?]_{S₁}
 it news true is that Gopal ag.m. what bought
 'The news that Gopal bought what is true?'

(37) Conjoined Noun Phrases

*NP [sōfa ʔr kiske]_{NP} bīc mē unhōne mēz rəkha hē?
 sofa and what between they table placed have
 'They have placed the table between the sofa and what?'

As above, the conclusion is that island violations are not an indication that rules involving movement or deletion have applied.

I would now like to review briefly the facts reported by James (1972) and Morgan (1975). They show that certain phenomena in English are sensitive to island constraints, but seem at least not to be explicable in terms of constraints on movement. James notes that the referent of the exclamation ah cannot be in an island. Thus in (38),

(38) Ah, it is reported by Newsweek that Kissinger is a vegetarian!

which contains an extraposed sentential subject, ah can be an expression of surprise that Newsweek made a certain report, or it can be an expression of surprise with regard to the proposition reported. In (39),

(39) Ah, that Kissinger is a vegetarian is reported by Newsweek!

however, where the sentential subject has not been extraposed and hence is an island, ah can only be interpreted as an expression of surprise that Newsweek made the report. It cannot be interpreted as surprise respecting the content of the report. Similar examples are provided by James showing that ah cannot refer to material inside complex NP's or coordinate structures.

Morgan shows that non-direct replies are sensitive to islands. In reply to (40)

(40) Why was Angela arrested?

(41) is felicitous, but (42) is not:

(41) The man who lives next door thinks she bought some guns.

(42) The man who thinks she bought some guns lives next door.

The infelicity of (42 as a non-direct reply to (40) seems to be due to the fact that the relevant information (she bought some guns) is inside an island, a complex NP, in (42). This is not the case with respect to (41). Thus (41) is felicitous.

The facts reported by Cole et al, James and Morgan would seem to indicate that the existence of island violations is not indicative of

movement into or out of the island structure. A variety of possible explanations for Postal's data suggest themselves. I will briefly review one possibility here. It would seem possible to explain naturally the facts noted by Postal in terms of the Extended Accessibility Hierarchy proposed by Cole et al. Another approach, not necessarily in conflict with the accessibility approach, is to examine from a functional point of view the environments in which the contradictory reading is preferred.¹⁷

Postal cites the following structures as islands, where the non-contradictory reading is blocked:

- (43)a. Sentential subjects, tough moved complements, topicalized constituents, pseudocleft complements, complements which have undergone right dislocation.
- b. Complements immediately preceded by adverbial phrases, the complements of manner of speaking verbs.
- c. Adverbial subordinate clauses, restrictive relative clauses.

I shall discuss each of the above groups of structures separately.

All the structures in (43a) have the following property in common. The clause in which a contradictory reading is preferred is normally taken as thematic (old information) rather than rhematic (new or asserted information). This is apparent from an examination of Postal's examples, which I cite below:¹⁸

- (44)a. Sentential Subject:
That Mary was older than she was was assumed by Jack.
(Postal's 49a)
- b. Tough Moved Complements:
That Mary was older than she was was easy for Melvin to believe.
(Postal's 49b)
- c. Topicalized Constituents:
That Mary was older than she was, Jack may not have reported.
(Postal's 49c)
- d. Complements of Noun Heads:
Melvin believes the claim that Mary is older than she is.
(Postal's 50a).
- e. Pseudocleft Complements:
What Melvin believes is that Mary is older than she is.
(Postal's 52a)
- f. Right Dislocated Complements:
John believes it, that Mary is taller than she is.
(Postal's 53a)

A comparison of the sentences of (44) with otherwise identical sentences that have not undergone the rule in question shows that these rules all have (or least can have) the function of indicating that the constituent in question is to be taken as background information, information presumed to be known by both speaker and hearer. Thus (44c) might be paraphrased as (45).

- (45)a. Talking about Mary's being older than she was, Jack may not have reported that.
 b. Mary was older than she was. Jack may not have reported that.

The point is that when the statement that Mary was older than she was is viewed as background for some further statement, only a literal (i.e. contradictory) reading is possible. This is because the situation described by the statement is taken as actual, part of the common knowledge shared by the speaker and hearer. Thus, in the sentences of (44), the situation described in Mary was older than she was is taken as common knowledge. To be altogether convincing, a much more detailed discussion would be necessary. But the thrust of my explanation should be clear. The functional effect of the rules involved in (44) is to cause the statement to be taken as a self-contained description of what the participants assume to be true. As a result, sentences like (44c) are interpreted like those of (45).¹⁹

My discussion of (43b) and (c) will be even briefer than that of (43a). Examples of the structures in (43b) are found in (46).

- (46)a. Complements Immediately Preceded by Adverbial Phrases:
 The Times said, I am quite sure, that Mary was older than she was. (Postal's 49e)
 b. Complements of Manner of Speaking Verbs:
 Jim moaned that Mary didn't kiss the boy she kissed.
 (Postal's 51b)

The tendency toward a contradictory reading in (46a) seems to me to be so slight as to verge on nonexistent. The insertion of the adverbial phrase before the complement may perhaps cause the complement to tend to be interpreted as an indirect quotation rather than as a paraphrase. If so, the preference for a contradictory reading could be explained on the same basis as (46b), to which I shall turn now. It should be noted that verbs of manner of speaking are usually interpreted as taking quotation complements. This is for obvious reasons. These verbs direct the listener's attention to the properties of the utterance such as tone of voice. The manner of speaking is not relevant to the paraphrase of the proposition expressed but rather to the utterance itself. Thus, the speaker of (46b), because he is employing a verb of manner of speaking, is interpreted as indirectly quoting Jim's utterance of (47).

- (47) Mary didn't kiss the boy she kissed.

Thus, the description is understood to be Jim's and not the speaker's. This explains why the constructions of (43b) would tend to be interpreted in the way that Postal says they are.

As for (43c) (adverbial subordinate clauses and restrictive relative clauses), Postal acknowledges that both the contradictory and non-contradictory readings are found in these structures.

- (43) c'. If Jack thinks that Mary is taller than she is, he will
buy the wrong dress. (Postal's 54)
c". Jack called the girl who believes Tom is taller than he is.
(Postal's 56)

Since these are claimed to be islands, the ambiguity would seem to be a prima facie counter example to Postal's claims. Thus, I shall not discuss such sentences any further.

In this section I have tried to do two things. First, I have presented evidence that Postal is wrong in assuming that island violations are indicative of movement into or out of an island. Second, I have shown that a plausible explanation for the data cited by Postal is possible without invoking movement. I do not claim to have fully motivated my non-movement analysis. To do so would have taken up a disproportionate amount of space. But the general outlines of my position should be clear.

My intent in this section was to show that island facts, though not necessarily inconsistent with Postal's analysis, do not provide any support for his position. I have treated this question at length because the island argument is the only affirmative argument of any potential force to be found in Postal's article. Without positive support from that argument Postal's analysis would seem thoroughly speculative.

7. The Predicate SAME

It was seen in Section 4 that in order to extend his analysis from comparatives like (9),

- (9) Fred thinks that he's richer than he is.

where a covert predicate MORE has great intuitive plausibility, to relative clauses like that of (6),

- (6) Tom says that the man who killed Kennedy didn't kill Kennedy.

a covert predicate, analogous to MORE was needed. The identity predicate SAME was proposed. Thus, on the noncontradictory reading, (6) was analyzed as an identity statement having a logical form roughly like (48).

- (48) x : Tom says not kill Kennedy (x) = y : Kill Kennedy (y)

The question which I shall address in this section is whether the logical form of sentences having the ambiguity illustrated in Section 1 is that of an identity statement. In claiming that they are identity statements, Postal is proposing that the verb phrases in sentences like (6), and in (1)-(3) as well, are disguised singular terms.²⁰ I believe that this is false.

The approach which I will take is the following. Postal has proposed that sentences like (6) have the logical form A is identical to B. If this is so, it should have some empirical consequences. What is needed is some kind of test of whether a surface element is a predicate

or an argument in logical structure. If it can be shown that the VPs that Postal is claiming are arguments do not behave like arguments but rather like predicates, then Postal's proposal has been falsified. What I shall try to do now is to find and apply such tests.

Preliminary to doing this, it should be noted that Postal would presumably not want to introduce SAME into the logical structure of sentences like Tom didn't kill Kennedy and the woman who shares an office with Bill didn't kill Kennedy. This is because Postal requires such simple sentences as x didn't kill Kennedy within the relative clause in his underlying structures. Otherwise an infinite regression would result. For instance, consider the effect on substituting NOT SAME (x) (the y such that y killed Kennedy) for x didn't kill Kennedy in (16). It would then be necessary to replace y killed Kennedy by SAME (y) (the z such that z killed Kennedy). But z killed Kennedy would need to undergo a similar replacement and the process would continue indefinitely. So Postal must allow the generation of sentences of the form a killed Kennedy, a is an anthropologist etc. These simple sentences do not contain the predicate SAME.

It has been established, then, that Postal would have to admit the existence of sentences without some predicate like SAME or MORE. Presumably, such predicates are restricted in some way (though I have no idea how such a restriction could be carried out) to environments where the ambiguity in question is found. Perhaps if we look at simple sentences without SAME we can find criteria for determining whether a given surface element is a logical predicate or a logical argument. We can then apply these criteria to sentences like (1)-(3) and (6) in order to see whether the material that Postal says is an argument of SAME behaves like a predicate or an argument.

As it happens, there is a reasonably well developed literature related to this topic. Much early work in Generative Semantics was devoted to arguments in favor of the claim that predicate nominals and predicate adjectives, as well as verbs, should be treated as logical predicates.

I shall proceed from the sentences where Postal's position might have a certain intuitive appeal--definite predicate nominals like (3)--to sentences where Postal's position clearly contradicts accepted logical analysis--predicate adjectives and verbs. I shall assume that if Postal's analysis is erroneous in treating predicate nominals as singular terms, the error is all the greater with regard to verbs and predicate adjectives. My method will be to show that the constituent in question (e.g. definite predicate nominals) have properties which show that they are not singular terms. I shall then show that these same properties are found in appropriately ambiguous sentences like (1)-(3). Thus, the complement verb phrases in (1)-(3) (and a fortiori in 6) are not singular terms. It follows that no predicate of identity can be posited for these sentences.

In making this argument I shall draw freely on the literature of Generative Semantics, where it is claimed that predicate nominals and predicate adjectives, as well as verbs, should be treated as logical predicates.²¹ The arguments in the literature (especially those of Bach 1968 and McCawley 1970) are still persuasive. I shall repeat

some of those arguments, adding others of my own, and shall then show that the arguments apply to the complement clauses of (1)-(3). Thus, if I am correct, (1)-(3) cannot be identity statements.

In much of the philosophical literature, sentences with definite predicate nominals have been treated as identity statements.²² These are the sentences for which an identity analysis has greatest intuitive plausibility. But, as Bach and McCawley have shown, not all such sentences are identity formulae. McCawley notes that (49) differs from (50) in a number of ways. I will repeat only one of his arguments here since the same point is made in all.

(49) Susan is my sister.

(50) Susan insulted my sister.

The phrase my sister in (49) lacks the referential properties normally associated with object noun phrases. For instance, my sister in (50) can be modified by a non-restrictive relative clause, but my sister in (49) cannot.

(51) *Susan is my sister, who is hard to get along with.²³

(52) Susan insulted my sister, who is hard to get along with.

Arguments of this sort suggest that in logical structure my sister in (49) is not a noun phrase. McCawley proposes that it derives from something like sister me. That is, the definite predicate nominal is an underlying predicate.

McCawley's argument carries over to sentences like (3). Consider (53).

(53)a. John said that the woman who shares an office with him is Tom's sister.

b. *John said that the woman who shares an office with him is Tom's sister, who is hard to get along with.

c. John said that the woman who shares an office with him was irritated by Tom's sister, who is hard to get along with.

The italicized noun phrase is ambiguous in (53) in the same way that it is ambiguous in (3): The woman who shares an office with him may be John's description or the speaker's. Thus (53) illustrates the ambiguity under consideration. The ungrammaticality of (53b) shows the inappropriateness of an identity analysis. The reason that these data are inconsistent with an identity analysis is that according to the identity analysis the verb phrase is Tom's sister is an argument of SAME in logical structure. Thus, it should be possible to modify it with a non-restrictive relative clause in (53), though not in such simple sentences as the woman who shares an office with me is Tom's sister. But the predicted contrast fails to appear. Hence, the verb phrase is Tom's sister would seem to have the same status when embedded in a complement clause that it has when it is in the matrix clause.

I should like to digress for a moment and add a logical argument to McCawley's syntactic argument. This argument does not directly extend to (1)-(3), but it is of importance because it adds credibility to McCawley's analysis, on which mine is based. It can be clearly shown that not all sentences with definite predicate nominals have the logical structure of identity statements. Consider (54).

(54) The editor is leaving and my wife is the editor.

On the assumption that my wife is the editor is an identity statement, (54) would be symbolized as (55).

(55) Is leaving (a) $b=a$
(where a represents the editor and b represents my wife)

Example (55) entails (56),

(56) Is leaving (b) $a=b$

which is the symbolic representation of (57).

(57) My wife is leaving and the editor is my wife.

Hence, if my wife is the editor is a statement of identity, then (58) must be true.

(58) The editor is leaving and my wife is the editor entails my wife is leaving and the editor is my wife.

But, (58) is clearly ridiculous, and the assumption leading to it, that my wife is the editor is an identity statement, should be rejected. Note that no such ridiculous consequences result if the editor is taken as a predicate claimed to be true of my wife.

The symbolic representation of (54) would then be (59) rather than (55). The logical form of example (59) does not imply that of (60).

(59) Is leaving (a) Editor (b)

(60) Is leaving (b) Wife (a)

These considerations show that the assumption that my wife is the editor is a statement of identity must be rejected because it leads to false inferences. However, the assumption that such sentences have the logical form $P(a)$ does not lead to false inferences. Hence, it is clearly the case that some surface sentences of the form the x is the y are not logically identity statements. These logical factors strengthen McCawley's claim that in logical structure such sentences are of the form $P(a)$.

The arguments against an identity analysis may be extended a fortiori to sentences with indefinite predicate nominals. It is

noteworthy that sentences like (61) are represented as (62) in standard logical notation,

(61) John is a doctor.

(62) Doctor
(John)

Where the subject is taken to be an argument of the predicate nominal, and not as (63),

(63) John=a doctor

an identity formula. The logical properties of predicates associated with indefinite predicate nominals has various syntactic reflections. The non-restrictive relative clause test works for indefinite predicate nominals as well as definites:

- (64)a. *John is a doctor, who is hard to get along with.
b. John met a doctor, who is hard to get along with.

- (65)a. John said that the woman who shares an office with him is a doctor.
b. *John said that the woman who shares an office with him is a doctor, who is hard to get along with.
c. John said that the woman who shares an office with him met a doctor, who is hard to get along with.

A further test is pseudocleft, which for some speakers can only apply to referential noun phrases. Compare

(66) What John saw was a giraffe.

and

(67) ??What John is is a doctor.²⁴

The same contrast is found in sentences like (2):

- (68)a. John says that the woman who shares an office with him saw a giraffe.
b. John says that the woman who shares an office with him is a doctor.
(69)a. What John says the woman who shares an office with him saw is a giraffe.
b. ??What John says the woman who shares an office with him is is a doctor.

Similar results hold for cleft sentences.

A further argument that sentences like (3) are not identity sentences is based on discourse conditions on definite noun phrases. The referent of an indefinite noun phrase may generally be referred to later in the discourse by a definite noun phrase. This is illustrated in (70).

- (70) John met a doctor. The doctor had red hair.

But note the oddness of (71).

- (71) *John is a doctor. The doctor has red hair.

Similarly, discourse (72) is well-formed (and appropriately ambiguous), but (73) is very strange.

- (72) Mary said that the woman who shares an office with her met a doctor. The doctor has red hair.
 (73) *Mary said that the woman who shares an office with her is a doctor. The doctor has red hair.

These arguments all point to the same conclusion. Sentences with predicate nominals, which at least look on the surface as though they might be statements of the form $a=b$, really have the form $P_{(a)}$. The arguments that these nominals are underlyingly predicates go through just as well when ambiguous definite descriptions are present as when they are not.²⁵ The contrast predicted by Postal's analysis between matrix and embedded predicate nominals simply does not occur.

There may be some justification for detailing arguments that predicate nominals are predicates rather than singular terms. In the case of predicate nominals there is at least the form of identity statements if *is* receives the interpretation '='. In the case of sentences with adjectives and verbs in predicate position, the adjectives and verbs are transparently predicates and the burden of proof clearly falls on one who would analyze them as singular terms. No argument whatsoever has been put forward by Postal in favor of such a position. Were it not for the fact that Postal's analysis requires that sentences like (1) and (6) be identity statements, I would hesitate to impute such a position to him. In the absence of clarification on Postal's part, I shall rely on the wide acceptance in the literature that adjectives and verbs are logical predicates. The reader is referred to Stockwell et al (1973) and to Lakoff (1965) and (1966)²⁶. The arguments that predicate adjectives and verbs are predicates are unaffected by the presence or absence of the ambiguity under discussion. Therefore, I do not think that this point need be belabored.

An additional argument against the hypothesis that sentences like (6) contain hidden singular terms was suggested by an anonymous reader. On either reading of (6) it is possible for Tom to believe that no one killed Kennedy. But this is impossible for (6') on any reading:

- (6') Tom says that the man who killed Kennedy isn't (the same as) the man who killed Kennedy.

The final definite description in (6') commits Tom to the view that someone killed Kennedy. This would seem to be a serious problem for any analysis in which didn't kill Kennedy in (6) is treated as a covert singular term.

I conclude that there is little or no reason to believe that the verb phrases in the complement clauses of (1)-(3) and (6) are disguised singular terms. If they are not, the sentences cannot be analyzed as statements of identity between singular terms. Hence, there is no reason to accept Postal's claim that the ambiguity illustrated in Section 1 is due to the relative scope of SAME etc. and verbs of propositional attitude. The proposal that (1)-(3) are identity statements appears unsupported by evidence.

8. Has Postal's Proposal Been Misconstrued?

In the previous pages I have construed Postal to be making the claim that (1)-(3) are identity statements, and have argued that that claim is erroneous. In this section I shall consider the possibility that Postal did not wish to make that claim.

I shall argue, however, that in order to be consistent in his analysis Postal would have to adopt the position I have argued against in Section 7. His only other choice would be to disclaim the overall position taken in Postal 1974.

I would like to present a reconstruction of Postal's position in order to see how his analysis might be reconstructed so as not to suffer from the difficulties pointed out in Section 7. The reconstruction is based on the fact that nowhere does Postal include sentences like (1)-(3) in his paper.

- (1) John said that the woman who shares an office with Bill is very intelligent.
- (2) John said that the woman who shares an office with Bill is an anthropologist.
- (3) John said that the woman who shares an office with Bill is the anthropologist who received the Meade Award.

Rather, he restricts his examples to comparatives like (9).

- (9) Fred thinks that he's richer than he is.

and relative clauses like (6).

- (6) Tom says that the man who killed Kennedy didn't kill Kennedy.

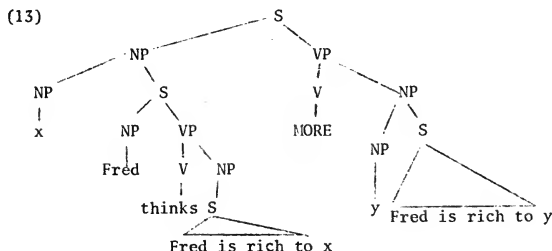
I shall assume for the sake of argument that Postal did not intend to explain the ambiguity of such sentences as (1)-(3). Perhaps he intended his analysis to apply only to comparatives and to sentences like (6) that might, by some mental gymnastics, be viewed as covert comparatives.²⁷ Could Postal's analysis then be saved from the difficulties discussed in previous sections?

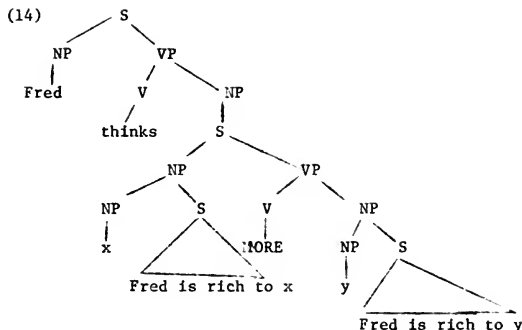
I shall argue that this ploy would fail for two reasons. First, in order to avoid having to account for (1)-(3), Postal would have to allow a rule of semantic interpretation like that needed by McCawley. But, as I shall show, McCawley's rule is able to account for comparatives, as well as for definite descriptions in environments like (1)-(3). So there would be no need for Postal's rule of semantic interpretation. Second, there is empirical evidence, which it seems to me Postal would have to accept, showing that the ambiguities in (1)-(3), and (6) and (9) should receive a unified analysis.

To turn to the first argument, it will be remembered from Section 2 that McCawley presupposes a rule of semantic interpretation in which the two interpretations are a function of the relative scope of a description and a verb of propositional attitude.

As was seen in Section 3, Postal assumes a very different rule of semantic interpretation, one which treats the ambiguity as deriving from the relative scope of such verbs as MORE and SAME, and a verb of propositional attitude. I further assumed in Section 4 that McCawley's rule was not available to Postal.²⁸ It was the absence of McCawley's rule that prompted the extension of the identity analysis to (1)-(3). I shall now assume that both rules are operative and examine the consequences.

It will be remembered that Postal and McCawley posited nearly identical underlying structures for comparatives. Comparatives were taken by both to involve the covert comparison (by some predicate like MORE) of two definite descriptions. Thus, both Postal and McCawley would agree (minor details aside) that the two readings of (9) derive from (13) (non-contradictory reading) and (14) (contradictory reading).





Note that both McCawley's and Postal's rules give the correct interpretations of comparatives (but see Reinhart 1975). McCawley's works because in (13) the definite description y: Fred is rich to y is outside the scope of think. In (14) this description is within the scope of think.

On the assumption that McCawley's rule of semantic interpretation is needed to account for (1)-(3), there is nothing to prevent the rule from applying to (13) and (14), and if this so, what work does Postal's rule do? McCawley's rule, which is independently necessary, would seem to accomplish all that Postal's does. Hence, the introduction of Postal's rule of interpretation for comparatives would be ruled out on grounds of simplicity of the sort discussed by Postal 1972. The point is that McCawley's rule, because it is more general, accounts for everything that Postal's rule accounts for and more. Postal's rule, on the other hand, only accounts for part of the data McCawley's rule accounts for. The choice between the two seems straightforward.

My second argument against my hypothetical reconstruction of Postal's position has to do with islands. Postal had claimed that a powerful argument for his analysis was that only the contradictory reading (that is, the reading on which the description was not supplied by the speaker, but rather was part of the original sentence the speaker is reporting) is found in islands. From this claim we know that if similar restrictions apply to definite descriptions in sentences like (1)-(3), Postal would have to say that they derive from identity statements. We shall see that island restrictions do in fact apply.

Compare (74a) with (74 b-d).

- (74)a. John said that the woman who shares an office with Bill is very intelligent.
- b. That the woman who shares an office with Bill is very intelligent has been said by John repeatedly.
- c. John said that she is very intelligent, the woman who shares an office with Bill.
- d. John believes the claim that the woman who shares an office with Bill is very intelligent.

The italicized noun phrase in sentences (74b-d), in contrast to (74a), tends to be interpreted as part of what John said and not as a description supplied by the speaker. That is, the italicized noun phrase tends to be restricted in its interpretation when it is found in an island structure. The tendency is less prominent in (74b-d) than in sentences like those of (44). But the difference in prominence is not due to a greater tendency in (74b-d) than in (44) to interpret the description as supplied by the speaker. Rather, it is due to the fact that the existence of a contradiction in the preferred reading of (44) makes the preference for that reading stand out. Hence, in (44) it is easier to distinguish the two readings. But close examination of (74b-d) shows that the descriptions tend to be understood as John's and not the speaker's. Therefore, Postal, in order to explain the island violations in terms of lowering, would have to posit a covert predicate like SAME for (1)-(3). But by doing so, Postal would open his analysis to the counter arguments of the previous section.

In this section I have examined whether Postal's analysis could be restricted to comparatives and coexist in a state of detente with McCawley's analysis. Whatever Postal's original intentions may have been (and it is unclear what they were), such a way out does not seem viable.

9. Conclusions

This paper has been devoted to a defence of McCawley's treatment of the ambiguity of (1)-(3) and similar sentences. There are two major problems with Postal's proposal: First, it requires the treatment of sentences like (1)-(3) as identity statements, a position which leads to false claims about the grammaticality of nominal sentences. Second, it is based on the assumption that island phenomena of the sort observed by Ross (1967) indicate the involvement of movement or deletion rules in the sentences. This assumption is shown to be false. Thus, I conclude that if the ambiguity of sentences like (1), (2), (3), (6) and (9) is in fact a scope ambiguity, an analysis along the lines of McCawley's is to be preferred to that of Postal.

FOOTNOTES

*I would like to thank Stanley Peters, Tanya Reinhart and Susan Schmerling for their comments on an earlier version of this paper. This study was funded in part by NSF Grant SOC 7500244.

¹McCawley (1971) is a revised version of McCawley (1970). I shall restrict my discussion to the latter version of the paper.

²McCawley was not, of course, the first to take cognizance of this ambiguity. As McCawley correctly notes, discussions in the philosophical literature date back to the Middle Ages. McCawley's analysis is quite similar to that of Quine (1960) *inter alia*.

³My trees follow the revised notation sanctioned in McCawley (1973).

⁴The class of predicates is traditionally restricted to verbs of propositional attitude and to alethic modals. Some such restriction is tacitly assumed wherever I do not explicitly mention it.

⁵I have used tree notation rather than bracketed strings. No theoretical import is to be attached to word order.

Postal frequently uses a system of brackets and parentheses in which (13) and (14) would be represented as (i) and (ii).

- (i) MORE x[Fred thinks (Fred is rich to x)] y[Fred is rich to y]
 (ii) Fred thinks (MORE x[Fred is rich to x] y[Fred is rich to y])

In Postal's notation, square brackets indicate restrictive relative clauses and parentheses indicate complements.

⁶These are Postal's examples (49a) and (50a).

⁷An explanation is provided why lowering into restrictive relative clauses is not in itself an island violation. The explanation will not be repeated here because it is not relevant to the issues at hand. See Section 8 of Postal's article for details.

⁸These derivations are intended to be rough approximations of Postal's derivations. See Postal Section 7 for details. Postal draws his trees with VSO order while I use SVO order. Word order is explicitly stated to be arbitrary by Postal, so I feel justified in yielding to my prejudice in favor of SVO in English.

⁹In what follows I shall assume for the sake of argument that the ambiguity under discussion really is sensitive to island constraints. But this is far from certain. It could be argued that Postal's data are incorrect and that both readings can be found in islands. I shall present an example of an island in which I find the noncontradictory reading, contrary to what Postal would predict. There does, however, seem to be something to the correlation Postal claims to have established, so I will not dwell on this line of attack unduly.

The following discourse would seem to cast doubt on Postal's claim that only the contradictory reading may be found in islands.

- (i) Yesterday John claimed that Mary was 42. He knows that she's really 36.
 He always teases her by making the claim that she is older than she is.

As far as I can tell, there is nothing in the least odd about (i). I suspect that the "missing readings" can be found if the right context is provided. I see no reason why context should affect the well foundedness of lowering verbs into islands.

¹⁰Cole et al (1977) is an extensively revised version of Cole et al (1975). In addition to showing that the movement-deletion analysis of

islands is false, Cole et al propose a somewhat speculative theory of islands based on an extension of the Keenan-Comrie NP Accessibility Hierarchy. It should be noted that evidence against the movement-deletion analysis is independent of the extended accessibility hypothesis. All further references to Cole et al are to the later version of the paper. Note that the arguments therein are valid against Perlmutter's (1972) proposal that island constraints are constraints on deletion. Thus, I refer to the movement-deletion analysis rather than simply to the movement analysis.

¹¹I have included only a brief summary of some of the major findings reported in Cole et al. For a more complete discussion of island phenomena in these languages see Cole et al. Data from a wider variety of island constructions are reported there as well.

¹²I would like to thank Dr. Ching-Hsiang Chen for providing information on island phenomena in Mandarin.

¹³For an interesting discussion of relativization in Hindi-Urdu, see Kachru (to appear). I would like to thank Professor Kachru for her assistance in analyzing evidence from Hindi. I would also like to thank S.N. Sridhar for collecting the Hindi data for this paper and for collaborating in the analysis of that data.

¹⁴The relativized noun phrase *jis kar ko* is fronted by an optional fronting rule from the preverbal position in S_2 . The unfronted version is ambiguous between (34) and a grammatical sentence, the gloss of which is 'The news that the car which Gopal bought is beautiful is true.' I have given the fronted version in order to eliminate the irrelevant, grammatical reading. For the conditions on fronting, see Kachru (forthcoming).

¹⁵See footnote 14.

¹⁶Here Hindi differs from Mandarin. Question formation does not result in island violations in Mandarin. See Chen (1974).

¹⁷I mean "functional" in the sense of the Prague School. The lack of conflict between the accessibility approach and the functional approach derives from the fact that the Accessibility Hierarchy itself needs to be explained. Why should there be a hierarchy of accessibility and why this particular hierarchy? It would be fruitful to determine if a functional account of the hierarchy is possible.

¹⁸Space prevents me from entering into a discussion of why these structures are thematic. An entire literature on Functional Sentence Perspective has appeared on this topic. A fairly comprehensive source of bibliographic references is to be found in Ziv (1976). See also Ben-Horin (forthcoming) on the pragmatic effect of topicalization and similar rules.

¹⁹I have deliberately avoided claiming that the constituents in question are semantically presupposed. Perhaps it would not be inaccurate to say that thematic material, like that discussed here, is pragmatically presupposed.

²⁰Some readers may find the analysis I have imputed to Postal so bizarre that they may suspect I have misconstrued his proposal. This question is dealt with in detail in Section 8.

²¹The position taken by Generative Semanticists did not originate with them. Rather, it was borrowed from modern logic. Cf. Quine (1960, 96), for example, where a similar claim was found.

²²But see Strawson (1950), who claims that some such sentences clearly are not identity statements.

²³The relative clause is intended to modify my sister, not to be an extraposed relative modifying Susan. The same caveat applies below.

²⁴Speakers who find (61) acceptable may try a different test. Compare

(i) John saw a puma.

(ii) The entity which John saw is a puma.
being

with

(iii) John is a lawyer.

(iv) ??The entity which John is is a lawyer.
being

For many speakers, paraphrase with the entity being is possible only if the noun phrase so paraphrased is referential. This accounts for the oddness of (iv).

²⁵I leave open the question of whether any predicate nominal constructions are statements of identity. Examples like

(i) Tully is Cicero.

may turn out to be true identity statements.

²⁶Standard logical notation treats predicate adjectives and verbs identically. Sentence (i) would be represented as (ii) and (i') as (ii').

(i) John is sleeping.

(ii) Sleep (John)

(i') John is intelligent.

(ii') Intelligent (John)

The verb and predicate adjective are analyzed as predicates and John as an argument of the predicate.

²⁷To retreat from my assumption for a moment, if this was Postal's intention, he did not signal it clearly. It is difficult to interpret Section 10 of Postal's paper as anything but a claim that his analysis remedies essential defects in McCawley's general approach.

²⁸This is nearly explicit in Section 10 of Postal.

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Pseudo-Passivization: On the Role of Pragmatics
in Determining Rule Unity

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This paper examines the syntactic behavior and the pragmatic function of prepositional phrases that undergo Pseudo-Passivization in English, in an attempt to characterize the domain of the rule and determine whether it shares sufficient similarities with Passivization so as to warrant a collapsing of the two processes under a single unitary rule. It is found that pragmatics plays an important role in determining the grammatical relation, if any, a prepositional phrase bears to its verb. A principled explanation based on pragmatic considerations is offered for the dichotomy of prepositional phrases into those that undergo Pseudo Passivization and Tough Movement and those that do not.

In theories of Relational Grammar proposed by Johnson (1974) and also by Postal and Perlmutter (unpublished work) the rule of Passivization is characterized by the demotion of a subject to chomeur status, coupled by the promotion of a direct object to subject status. We have chosen to work within a relational framework for the purposes of this paper because the syntactic rules relevant to our study--namely Passivization and Tough Movement--can be most adequately and directly formulated in terms of changes in the grammatical relations of certain constituents to the verb or verbs in the sentence, providing the basis for capturing the similarities between various cases of each rule involving different structural descriptions. The passivization transformation applies to sentences like (1a), promoting the direct object the apple to subject status and demoting the subject John to chomeur status--that is to say, to a status of unemployment, where it no longer bears any relation to the verb. The result of such a transformation is (1b).

- (1)a. John ate the apple.
- b. The apple was eaten by John.

Pseudo Passivization in English derives a structure like (2b) from one like (2a).

- (2)a. Napoleon has slept in this bed.
- b. This bed has been slept in by Napoleon.

Pseudo passive and passive sentences are similar in the morphology of the verb--both verbs are made up of the auxiliary BE followed by the past participle--and in the morphology of the agent phrase--both agents are preceded by the preposition by. These similarities show up clearly in (1b) and (2b).

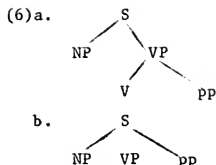
Aside from their morphological similarities, Passivization

and Pseudo Passivization share certain relation changing properties. Both rules involve the demotion of the subject and the promotion of some other constituent to subject status. The demotion of the subject has been claimed by Keenan (1975) to be the primary universal property of Passivization, with the promotion of some other NP to assume the position of the subject being a secondary property of the rule, not necessarily shared by all Passivization rules. This would also mean that the grammatical relation of the promoted constituent could vary from language to language, and possibly, within a single language. According to Keenan, then, the Passivization rule is characterized such that it could generate (1b) and (2b) as different instantiations of a single syntactic process. The two instantiations of the rule would differ in one aspect--namely in the identity of the grammatical relation of the constituent that is promoted to subject status. In a passive sentence an ex-direct object has been promoted to subject position, while in a pseudo-passive sentence the promoted subject is a prepositional phrase generally considered to be a non-term, bearing no relation to its verb.

Previous analyses of Pseudo Passivization--for example, Chomsky (1965) and Lakoff (1965) recognized its similarities to Passivization and attempted to reflect these similarities in structural terms by claiming that the Pseudo-Passivizable prepositional phrases originate in the VP, as do direct objects. This claim allows for a unitary rule of Passivization to move the constituent under the VP node to subject position, deriving (1b) from (1a) and (2b) from (2a). These analyses also recognized that Pseudo Passivization was not a general process that applied "across the board" to promote all prepositional phrases to subject position. The prepositional phrases in (3a) - (5a), for example, when Passivized, produce respectively the ungrammatical sentences:

- (3)a. John walked in front of the tall buildings.
b. *The tall buildings were walked in front of by John.
- (4)a. Someone slept during the day.
b. *The day was slept during.
- (5)a. Someone stepped up the ladder.
b. *The ladder was stepped up.

In order to exclude such sentences from the outputs of Passivization the prepositional phrases that do not undergo the rule were claimed to originate outside the VP node, directly under the S node. Thus, the deep structure for (2b) in such an analysis would be something like (6a) while that for (3b) - (5b) would look like (6b):



Johnson (1974) provides an analysis for pseudo passive sentences within the framework of Relational Grammar. He extends the domain of the rule of Predicate Raising to operate on active sentences with pseudo passivizable prepositional phrases, incorporating what he calls "the essentially verb-like" preposition into the verb, thereby making it the object of the unified verb. Such a promotion of the object of the preposition from non-termhood to objecthood renders it accessible to the rule of Passivization, so that there is no need for positing a separate rule of Pseudo Passivization to generate sentences like (2b). Then, in order to block Passivization from applying to sentences like (3a) - (5a) and producing ungrammatical sentences like (3b) - (5b), the prepositions in (3a) - (5a) would not undergo the rule of Predicate Raising which incorporates them into the verb. Thus, since the preposition in such sentences does not undergo Predicate Raising, the object of the preposition remains inaccessible to Passivization. In Johnson's analysis, then, the Passivizability of a prepositional phrase depends on whether or not its preposition had undergone Predicate Raising, assuming the role of a verbal particle in a higher verb. However, there is no independent empirical evidence for the existence of active counterparts of pseudo-passive sentences, in which the preposition behaves like a particle, undergoing optional Particle Movement around a non-pronominal direct-object NP, and obligatory Particle Movement around a direct object pronoun. In fact, the prepositions that appear in structures that can undergo Pseudo Passivization cannot undergo the Particle Movement rule. Thus, (7a) in which *up* is clearly a verbal particle can undergo optional Particle Movement if the direct object is non-pronominal (7b), and must undergo the rule if the direct object is a pronoun (compare (7c) with (7d)), whereas the preposition in the Pseudo Passivizable (2a) does not undergo any form of Particle Movement, as (8a) - (8c) indicate.

- (7)a. I looked up the word.
 b. I looked the word up.
 c. *I looked up it.
 d. I looked it up.
- (8)a. *Napoleon has slept this bed in.
 b. Napoleon has slept in it.
 c. *Napoleon has slept it in.

In any case, all previous analyses fail to provide a principled dichotomy between Pseudo passivizable and non-Pseudo Passivizable prepositional phrases, and would have to resort to some sort of ad hoc

device in the lexicon for marking the two types of prepositional phrases. The most likely target for such marking is the prepositions themselves.

Besides being arbitrary, such a marking in the lexicon fails to account for cases where the same preposition undergoes Predicate Raising to render its Object accessible to Passivization in one sentence, but not in another, even when the verbs in the two sentences are identical. Consider, for example, sentences (9a) and (9b), both containing the verb live and the preposition in.

- (9)a. This cabin has been lived in by many famous dignitaries.
 b. *The U.S. has been lived in by Ann.

The analysis presented in this paper agrees with the earlier ones in their recognition of the object-like properties of the Pseudo Passivizable prepositional phrases, and of the concept that Pseudo Passivization is a subcase of the rule of Passivization.¹ It is superior, however, to previous analyses in that it provides a pragmatic/syntactic explanation for the object-like behavior of the prepositional phrases that undergo the rule, thereby avoiding any arbitrary listings in the lexicon. Whether a given prepositional phrase acts like a direct object as evidenced by its syntactic behavior such as accessibility to Passivization or whether it acts as a non-term, bearing no grammatical relation to the verb, depends on its use in the given linguistic and situational context.

The prepositional phrase tends to function as a direct object just in case it in itself is crucial to the complete description of the activity expressed in the verb, rather than merely indicating the time or place, for example, where the activity takes place. Consider the active sentence (2a). Sentence (2a) is vague with respect to the function of the prepositional phrase in this bed, which can be two-fold: first, it designates the location of the activity, and second, it designates the experiencer of the effect of the activity denoted by the verb; this bed in (2a) has received special prominence due to the historical significance of the event performed in it. This second non-locative function of the prepositional phrase is similar to that of the experience-type direct object, whose referent is generally affected in some way by the activity denoted by the verb. Thus sentence (2a) involves the same type of relation between the verb and the prepositional phrase as that found between the verb and the direct object in (10), for example.

- (10) Napoleon bought this bed.

Example (2b), the passive version of (2a), is not at all vague with respect to the function of the promoted prepositional phrase. The function of this bed in (2b) is clearly that of the experiencer of the activity in the verb. Though the effects of Napoleon's sleeping may not be physically detectable on the bed, the bed has been affected in some special historical sense. Thus Pseudo Passivization involves an exploitation of a syntactic construction to pragmatically

convey an "experiencer" object-like reading of the prepositional phrase.

In contrast, the prepositional phrases in the active sentences (3a) - (5a) designate the location, the time, and the direction in which the respective activities took place, so that they do not constitute an integral part of the activity in the verb, as the referents of grammatical relations do. Such prepositional phrases provide more details about the activity. Having no object-like involvement in the activity of the verb, these prepositional phrases are inaccessible to Passivization, as their ungrammatical passive counterparts (3b) - (5b) indicate. We see, then, that though Pseudo-Passivization involves the exploitations of syntactic form to pragmatically convey a semantically object-like function of the promoted subject, its application involves the exploiting of pragmatics to determine whether a certain syntactic form is appropriate in a given context.

Now look at examples (9a) and (9b). While in (9b) it is not likely that the U.S. can be affected in any detectable manner by the fact that a woman Ann has lived in it, in (9a) it is easily conceivable how this cabin can be affected by the fact that many famous dignitaries have lived in it; perhaps the cabin itself has become famous as a result. Thus the pseudo passive (9a) is well-formed, while (9b) is not.

Additional examples of grammatical pseudo-passives will help clarify how the passive syntactic structure is exploited to convey the function of certain constituents in the sentence--that is to say to convey the semantic relation such constituents bear to the verb of the sentence. Now look at sentence (11).

(11) This bed has been slept in!

(11) is appropriate only in a situation where the bed has been affected in a way, that the effects are apparent. For example, a person having checked into a hotel, upon entering his hotel room the first time could utter (11) if he notices that the sheets on the bed are rumpled. However, (11) would not be appropriate if this bed was used in a locative sense in a situation where there was no physically detectable evidence of someone having slept in it.

Another example is (12):

(12) I got rained on!

Though the active counterpart of (12) would probable contain the prepositional phrase on me which can be interpreted as a location, I in (12) does not designate a location where the rain fell, but a referent for the experiencer of the rain. I is the "recipient" or "patient", affected by the rain drops, so that it bears a semantic relation to the verb similar to that borne by underlying direct objects.

A third example is (13):

(13) The winter is slept through by a good portion of the animal kingdom.

Here again the winter does not designate the time when the sleeping activity takes place. The winter is crucial to the activity in that it designates "the assets," so to speak, that were used up in the activity. Thus, the active counterpart of (13), (14a) involves a relationship between the verb sleep and the prepositional phrase through the winter very similar to that between the verb and the direct object in a sentence like (14b):

- (14)a. A good portion of the animal kingdom sleeps through the winter.
- b. A good portion of the animal kingdom spends the winter sleeping.

In (14b) the direct object the winter constitutes the assets used up in the activity denoted by the verb spends.

At this point, it is appropriate to mention that there is a wide range of variation in the acceptability of pseudo passive sentences. This variability in judgement on the part of the hearer is attributed to the pragmatic considerations involved in the interpretation of such sentences. The context of situation and the intentions of the speaker have to be considered in the judgement of the sentences; and certainly one would expect different hearers to have predispositions to perceive different aspects of the situation as crucial to the context, and to interpret in different ways the intentions of the speaker. The judgement of something within context is a relative judgement which draws upon one's experience, among other things, so that, different people may judge the same thing with as great a variation as that of the actual experiences they had involving similar situations.²

In order to substantiate further the claim that the pseudo passivized prepositional phrases do not designate location or time, we show that the clearly locative prepositional phrases cannot Pseudo-Passivize. Look at an active sentence like (15a) where it is obvious that in this house has a locative reading only. The phrase with his wife Martha renders the experiencer interpretation of this house unlikely, since such an interpretation would force an instrumental reading on the phrase with his wife Martha, which is absurd.³ Having shown that the only possible function of in this house is a locative one, it is predictable that the pseudo passive version of (15a) would be ungrammatical. This is indeed the case, as (15b) indicates.

- (15)a. George Washington lived in this house with his wife Martha.
- b. *This house was lived in by George Washington with his wife Martha.

This pragmatic explanation for the grammaticality distribution of pseudo-passive sentences is also able to explain the previously unexplained distribution of Tough Movement on prepositional phrases. Tough Movement applies to a direct object, indirect object, or a

prepositional phrase of an embedded subject complement, promoting it to matrix subject position. Thus, for example, it applies to a bisentential deep structure like (16a) to produce a monosentential one like (16b).

- (16)a. [Someone eat the apple] is easy
b. The apple is easy to eat.

Not all prepositional phrases can undergo Tough Movement. No analysis of this rule available to date provides a principle for predicting which prepositions can undergo the rule. For example, (17a)-(17c) are grammatical though the prepositional phrases in them have undergone Tough Movement, whereas the Tough Movement of some other prepositional phrases in similar structures result in ungrammatical/unacceptable sentences as (19a) - (18c) indicate:

- (17)a. This bed is difficult to sleep in.
b. This cabin is impossible to live in.
c. Last night was easy to sleep through.
(18)a.*??The tall buildings were impossible for John to walk in front of.
b.*??The day was tough to sleep during.
c.*??The ladder was easy to step up.

Sentences (17a) - (17c) and (18a) - (18c) indicate that it is only the Pseudo-Passivizable prepositional phrases that are accessible to Tough Movement. What is common to the prepositional phrases that can be Tough Moved and those that can be Passivized is their object-like function--that is their crucial involvement in the activity designated by the verb such as that of "experienter," "asset," etc. These prepositional phrases are not used in a "locative" or "directional" sense, for example.

Locative prepositional phrases, for example, cannot undergo Tough Movement to become the derived subjects of the resulting Tough Moved constructions. Consider sentence (19a) which clearly conveys that it is the property of John that causes him to get lost and that anywhere designates 'location' only, and plays no role in his misfortune of getting lost. Thus, (19a) does not have a well-formed Tough Moved counterpart wherein the locative anywhere has become the derived matrix subject:

- (19)a. It is easy for John to get lost anywhere.
b. *Anywhere is easy for John to get lost in.

On the other hand, a sentence like (20a) where it is clear that the locative prepositional phrase in the Black Forest is crucially involved in the fact that people are getting lost there, (and that it does not merely designate location for the activity expressed in the verb), has a well-formed Tough Moved counterpart, wherein the locative Black Forest has become the derived matrix subject:

(20)a. It is easy for everyone to get lost in the Black Forest.

b. The Black Forest is easy (for everyone) to get lost in.

It is interesting to note that though the acceptability of Tough Moved sentences, like pseudo passives, varies a great deal from speaker to speaker, in general the range of Tough Moved sentences is greater than that of pseudo passive ones. Given certain contexts, more prepositional phrases can be Tough Moved than can be Pseudo Passivized, as sentences (18a) - (18c) indicate (cf. (3b), (4b) and (5b) respectively. Though we cannot pinpoint exactly what it is about Tough Movable constructions that allows for the greater tendency to interpret the prepositional phrase as crucial to the activity of the verb than in Pseudo Passivizable ones, we suspect that it may have to do with the fact that the former constructions contain two verbs. This point, however, deserves special attention, which we cannot devote to it in this paper.⁴

Related to the wide range of Tough Movable prepositional phrases, when compared with the Pseudo Passivizable ones, is the restriction that object-like prepositional phrases undergo the rule of Passivization only in sentences which lack a syntactically transparent direct object. Thus a sentence like (20a) can be Passivized into (20b), but not (20c), even if the situation allows for a reading where the bed has been affected, as evidenced by physical clues on the bed, such as a pair of glasses, an open book, and perhaps a rumpled bed cover.

(21)a. Someone has read a book in my bed.

b. A book has been read in my bed.

c. *My bed has been read a book in.

Tough Movement, on the other hand, is less restricted in that direct objects and indirect objects, as well as the object-like prepositional phrases are in potential equally accessible to the rule, so that the preference of one Tough Moved version over the others would depend solely upon the speaker's intentions. For example, a sentence like (21a) which contains both a direct object and an object-like preposition can be Tough Moved to produce (21b) or (21c).

(22)a. It is tough to play the sonata on this violin.

b. The sonata is tough to play on this violin.

c. This violin is tough to play the sonata on.

The generalization we arrive at from this study of Passivization and Tough Movement of prepositional phrases is that the prepositional phrases which undergo these rules are the ones that have object-like semantic or pragmatic functions in the particular linguistic and/or situational contexts in which they were used. Thus one cannot determine the grammatical relation of a constituent strictly in terms of its syntactic and semantic properties

without taking into consideration the context in which it was used and the intentions of the speaker. Pragmatic factors such as these play an important role in determining grammatical relations in sentences, and consequently, in determining whether or not certain relation-changing processes are cases of the same rule.

Footnotes

*This research was supported by NSF Grant SOC 75-00244.

¹We are aware of the complex issues that such a view must face, especially questions that deal with the characterization of the verb classes that govern such a unitary Passivization rule and the characterization of the grammatical relations that are involved in the rule. We suspect that the answers to such questions will ultimately have to include pragmatic/semantic considerations of some sort.

²The same reasons can be forwarded for variability in the judgement of the Tough Moved sentences which will be discussed later on in the paper.

³We owe this argument to Evelyn Ransom. However, there are sentences such as (i) where, though all her dresses clearly is the patient or experiencer, such a reading does not force the phrase with her sister to be interpreted as an instrumental.

(i) She buys all her dresses with her sister.

Thus the argument provided for the "locativeness" of the phrase in this house in (15a) is not as straightforward as one would think. But careful consideration of the semantics conveyed by (i) where with her sister is related to the higher, abstract verb GOES rather than the verb buy, so that it does not have to be interpreted as an instrumental:

(ii) She GOES to buy all her dresses with her sister

⁴A Tough Moved sentence like (i) is acceptable, for example, while the pseudo passive (15b), as we have shown, is not.

(i) This house is impossible for George Washington to live in with his wife Martha.

Probably, as suggested in Footnote 3, the phrase with SOMEONE is in some cases related to a higher verb, so that in (i) with Martha plays a crucial role in making the house impossible to live in.

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DO INVERSIONS IN ENGLISH CHANGE GRAMMATICAL RELATIONS?*

Georgia M. Green

Abstract

Q: Do inversions in English change grammatical relations?

- A: a. Maybe.
b. It all depends.
c. Damned if I know.
d. All of the above.

1. Introduction

Let me begin by specifying what I mean by inversion. I use this term to include any construction where the Noun Phrase (NP) understood to be the subject follows, immediately or ultimately, part or all of its inflected verb. The range of inversion phenomena I will be examining are illustrated in (1) below.

1. 1a In the garden was a birdbath.
1. 1b On the wall hung a picture of Lincoln.
1. 2a At issue is the moral fiber of the nation.
1. 2b In this category belong all neuter nouns of the third declension.
1. 2c To the fire were attributed the deaths of two tenants.
1. 3 Into the room strode a handsome young man.
1. 4a Up went the balloon.
1. 4b Here comes the bus.
1. 4c Now comes the death-defying act of the Walenji Brothers.
1. 5 More significant is the number of hours they work.
1. 6a Standing in her stall was a chestnut mare.

1. 6b Climbing into the garden was a sorry-looking lad.
1. 6c Stalking into the room came the director of the school.
1. 7a Stacked in the garage was half a cord of wood.
1. 7b Arrested today were three members of the notorious Williamson family.
1. 7c Propped against the wall stood a signed Picasso.
1. 8a Never will we agree to such a condition.
1. 8b Nor will we agree to such a condition.
1. 8c No sooner did he say yes than we were on our way.
1. 8d Hardly had our pudding arrived when he sprang up with a choked cry.
1. 8e Often did I visit the inhabitants of that gloomy village.
1. 9a Not a bite did she eat.
1. 9b Hardly a soul did we see that wasn't in formal attire.
1. 10a (Boy) Is syntax ever hard!
1. 10b Boy, do they make you do a lot of work.
1. 11a So tall was he.
1. 11b So politely did he treat his guests.
1. 12 Such humiliation did he suffer.
1. 13a So clever was he that we never even tried to catch him.
1. 13b So quickly did he return that no one noticed he had been gone.
1. 13c Such poverty was our hero reduced to that he ate only the discarded crusts of bread.
1. 14 The more John looked, the more was he inclined to give up the search.
1. 15a No one so clearly deserved an award as did the little boy from Columbus.
1. 15b Someone like your cousin would be more easily persuaded than would Mary or Bill.
1. 16 No one thinks I can win a ribbon, but win one, I will.
1. 17 John was in San Francisco, and so was Charlie.

- 1. 18a Were I a doctor, I would know what to do.
- 1. 18b Had we seen the file, we would have known not to volunteer.
- 1. 18c Should we go to Chicago, you can come with us.
- 1. 19 "I can't go on", cried Mary.

Strictly speaking, my definition includes a couple of constructions not on this list, for instance Yes-No Question Formation, as in (2), ordinary there-Insertion, as in (3), and Presentational there-Insertion, as in (4)

- 2. Is John a doctor?
- 3. There is a mouse in the bathtub.
- 4. There hung on the wall a/John's picture of Sapir.

To my knowledge, no one has ever argued or assumed that Yes-No Question Formation changes grammatical relations (and no doubt with good reason). Presentational there-insertion, interestingly, bears a number of distributional and functional similarities to the inversions 1, 3, 6, and 7. Aissen (1975) has argued on some evidence that it is a cyclic rule relation-changing because it inserts a dummy subject, but its derivational relation to inversions 1, 3, 6, and 7, (if any) which I take up in detail elsewhere (Green, Forthcoming), is by no means obvious. Ordinary there-Insertion, of course, was one of the first rules to be identified as changing grammatical relations, as it introduced a "dummy" subject, there, which was affected by subject-sensitive rules (e.g. Subject Raising, Passive). Indeed, on reflection, I find that it was an intuition that the inversions in (1) did not affect grammatical relations that led me to ignore ordinary there-insertion in investigating properties of inversions.

However, it has been argued recently that at least some inversions¹ do change grammatical relations; specifically that they demote the subject NP to *chômeur* status, and promote a null dummy to subject status. But regardless of whether it is a null dummy or the prepositional phrase which becomes the subject, the full NP subject (an underlying subject in most cases--2c, 7a, and 7b are notable exceptions) loses its subject status.

I have tried, with absolutely inconclusive results, to corroborate or disconfirm these grammatical-relation changing hypotheses with respect to the inversion phenomena exemplified in (1). My reasoning went as follows: If the inverted subjects cease to be subjects, they should be susceptible to processes that affect only non-subjects (e.g. Heavy NP Shift, Tough-Movement). If the initial (usually adverbial) phrase is affected by subject-sensitive rules (e.g. Subject-to-Object Raising, Subject-to-Subject Raising), or controls subject-controlled

properties (e.g. verb agreement), then we will have evidence that it has become a subject. As we shall see later, failure to find such evidence does not necessarily mean that the preverbal phrases are not subjects.

The results of my investigation of these questions are summarized in Table I. As can be seen, the results are on the surface inconsistent. There is no consistent evidence that the preverbal phrase is a subject, as seen by the fact that there are no rows with only plusses in the columns that represent tests for subjecthood (columns 2,3,9,10). In fact, the only consistent subject-test data uncovered suggest that the preverbal phrases in inversions of type 2 are not subjects.

However, with the exception of the Heavy NP Shift and Tough-Movement data, which as we shall see are problematical on a number of counts, there is consistent evidence that the post-verbal NPs are non-subjects; the tests for non-subjects in columns 6 and 7 suggest that all of the inversions tested demote the pre-inversion subject to non-subject status. This of course leaves us with a very interesting question: if the preverbal phrases are not derived subjects, and the post-verbal NPs do not remain subjects, do these constructions have surface subjects? A desire to give a 'yes' answer to this question is evidently the motivation for the Null-Dummy Subject Hypothesis, but, as we shall see, there is more than one plausible assumption we can make which would allow us to avoid this conclusion. One reason for inconsistency of results involves the fact that some of the tests are in a sense ambiguous; in many cases there seem to be alternative explanations for positive or negative results, and no obvious way of excluding one or another explanation as incorrect. To see this, let us examine the columns one at a time.

2. Heavy NP Shift as a Test for Non-subjecthood

Let us look first at the applicability of Heavy NP Shift (HNPS) to the nineteen constructions mentioned above. Since this rule does not apply subjects, (cf. Postal 1974, Ch. 4), regardless of their position in the sentence as shown in (5a-c), but does apply to NPs bearing other grammatical relations (5d-f), it ought to provide a test for non-subjecthood: if the result of moving a heavy post-verbal NP in an inversion is a grammatical sentence, then that will be evidence that the NP has ceased to be a subject by the time the rule applies. The problem, of course, is showing that displacement of the NP is a result of Heavy NP shift, and not some other rule.

- 5a *Went home, the man who had been hanging around the department all day.
- 5b *Will go home, you and your snivelling friend?
- 5c *Yesterday went home 16,000 more tired American troops.
- 5d They attributed to arson the fire that destroyed three south-east Urban homes and a nearly completed dissertation.
- 5e I believed to be at home all of the youths that are accused of participating in the vandalism.
- 5f There was in the garden a unicorn with three golden chains around its neck.

Inver- tion index	Mnemonic Example	Inv. type	HNFS		S-S Rais. Possibility of explaining with "VP-inv."	HNPS, S-S Rais.		Pre V/A	Phrase	NP	Post-V	NP	V/A	NP	Pre-V	Phrase	Ins.	Verb
			applies to	post-V/A	Phrase	applies to	post-V/A	Phrase										
1a	In the garden	A+be	+	?	?	+	+	-	-	+	+	+	-	+	+	+	+	agrees
1b	On the wall	A+V	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
2a	At issue	A+be	?	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
2b	In this category	A+V	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
2c	To the fire	A+V	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
3	Into the room	A+V	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
4	Up	A+V	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
4a	Here	A+V	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
4b	Now	A+V	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
4c	More significant	A+be	?	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
5	Standing in NP	A+be	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
6a	Climbing over NP	A+be	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
6b	Leaning against NP	A+V	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
6c	Arrested today	A+be	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
7a	Stacked in NP	A+be	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
7b	Piled in NP	A+V	+	??	??	+	+	-	-	+	+	+	-	+	+	??	??	agrees
7c	Never	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8a	Nor	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8b	No sooner...than	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8c	Hardly...when	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8d	Often	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8e	Not a N	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
9a	Hardly a N...that	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
9b	Exclamation	be	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
0a	Exclamation	do	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
0b	Exclamation	do	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
1a	So ADV	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
1b	Such N	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
2	Such N	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
3a	So ADV...that	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
3b	So ADV...that	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
3c	Such N...that	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
4	The more...the more	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
4a	As COMP	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
5a	Than COMP	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
5b	(VP-Preposing)	VP-A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
6	So be/do	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
7	Conditional were	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8a	Conditional <u>had</u>	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8b	Conditional <u>should</u>	A	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees
8c	Quotation	(A+V)	-	-	-	+	+	-	-	+	+	+	-	+	+	??	??	agrees

[+]=follows if grammatical relations are changed by preposing and/or inversion.

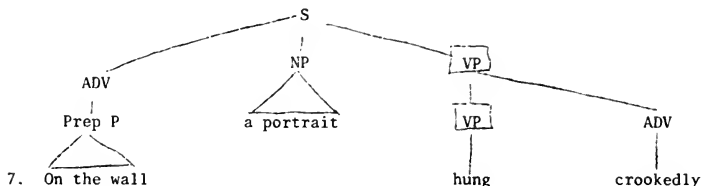
[P] indicates results may be due to parenthetical insertion rather than to HNPS

Examples of the relevant data are cited in (6).

- 6.1b On the wall hung crookedly ??a portrait/an old portrait of Lincoln which had been painted by Turner or one of his associates.
- 6.2c To the fire were attributed without comment ??two deaths/ the deaths of two tenants and three firemen.
- 6.4a *Away floated slowly little Tommy Tinker's new helium balloon.
- 6.8a *Never was so high the price of half a pound of ground venison.
- 6.18b *Had left earlier Mary and Sam Turner, they would not have been there when the police arrived.
- 6.19 *"I can't go on" said aloud the very frightened young girl from Columbus, Missouri.

The first snag that arises in interpreting these data is the possibility that examples like 6.1b and 6.2c are derived not by HNPS, but by the inversion rule itself, which would in these cases be formulated as inverting the subject not with just the verb-auxiliary complex (henceforth, the verb complex), but (optionally, just in case the ex-subject is "heavy") with the entire Verb Phrase (VP) assuming that the adverbial material which precedes the original subject (crookedly, without comment) can be shown independently to be a part of the VP. It could be claimed that the reason 6.4a is ungrammatical is that that inversion only inverts the subject with the verb complex, not the entire VP, and it would follow that inversions 8-19 would not give the appearance of permitting HNPS, because it is already clear that inversion there is only with the first auxiliary verb--if there is no auxiliary verb, these constructions all require do-support.

Of course, one would still have to explain how the inversion rule could have a disjunctive structural change: it would have to be able to put the subject after either the verb and its auxiliaries, or after the entire VP, including adverbs. This could be generalized only by postulating a convention parallel to Ross' (1967) Pied Piping Convention: a VP-Pied Piping Convention that would invert with a subject either its VP, or a left branch of that VP which was itself a VP. And this would entail justifying for sentences like (6.1b) a pre-inversion structure like (7), where, whatever the correct node labels are, those for the boxed nodes are the same



I am aware of no evidence which is consistent with the claim that crookedly and hung are sisters, that indicates that hung and hung crookedly are phrases of the same syntactic category. The (notorious) do so-test of Lakoff and Ross (1965), in fact, claims that manner adverbs like crookedly, for example, and duration adverbs like those found with constructions 1a, 2a, 6a, and 7a when they can be (apparently) moved by HNPS, are outside the verb phrase.² Of course, if the structure in (7) is correct, these adverbs are also inside the higher VP. Furthermore, if it can be shown (as hinted by Lakoff (1971:238n)) that surface "Verb Phrases" are always derived constituents, and there is no justification for an underlying label VP, then it may well be that surface configurations like (7) are correct, although it is not clear what the boxed labels should be. In all of the grammatical cases in Column 1, where HNPS has apparently applied to what was a subject before inversion, the possibility exists that the intervening material comes to its surface position by being part of the VP (or equivalent constituent), and being inverted (over) along with the inflected verb by a pied-piping inversion rule, as in (8).

- 8a INPUT: [Heavy NP] [_{VP} [_{VP} [hung] [on the wall]]] _{VP} crookedly] _{VP}
 8b PREPOS: On the wall [Heavy NP] [_{VP} [hung] crookedly] _{VP}
 8c INVERT: On the wall [[hung] crookedly] [Heavy NP]

It would also be possible to derive these sentences by Presentational there-Insertion (PRES-TI), with subsequent there-Deletion, as in (9), but that is another story.³

- 9a INPUT: [Heavy NP] [_{VP} [_{VP} [hung] [on the wall]]] _{VP} crookedly] _{VP}
 9b PRES-TI: There [[hung] [on the wall]] crookedly] _{VP} [Heavy NP]
 9c PREPOS: [On the wall] there [[hung] crookedly] _{VP} [Heavy NP]
 9d There-DEL: [On the wall] [[hung] crookedly] [Heavy NP]

In addition to the problem of the double structural change, it is suspicious that only relatively heavy NPs may be shifted over material that follows the main verb, as (6.1b) and (6.2c) show. This means that a "heavy subject" condition on the inversion rules, whether local, global, or a level, surface structure constraint, would be duplicating the effect of HNPS, except that it would refer to subjects rather than to non-subjects. Thus it appears that a generalization is being missed by claiming that HNPS is not involved in the derivation of these sentences. On the other hand, I suppose someone might be able to make this into evidence for a syntactic conspiracy, or to claim that this complementary distribution was evidence that HNPS has no non-subject restriction.

But equally, there is a problem with saying that examples like (6.1b) and (6.2c) show the effect of HNPS interacting with rules that invert subjects with just the verb complex. While HNPS would predict correctly that longer final NPs would sound better than shorter ones, it would also predict, incorrectly, that inversions where relatively short NPs preceded adverbs, as in (10.1b) and (10.2c), would be acceptable. But in fact, they are not always better than their "shifted" counterparts in (6).

10.1b ??On the wall hung a portrait crookedly.

10.2c To the fire were attributed two deaths without comment.

On the basis of my acceptability judgements, HNPS makes incorrect predictions of this sort in the cases of inversions 1b, 2a, 6a, and 7a. One could, I suppose, get out of this dilemma by imposing some sort of filter on these inversions (a sub-class of all inversions that allow heavy pre-inversion subjects to follow postverbal adverbs) that would ban inverted subjects in non-final position. Under this analysis, the ??-ed example in (6.1b) would be unacceptable because HNPS had incorrectly applied to a non-heavy NP, and (10.1b) would be unacceptable because the inverted subject is not clause-final. At present, however, I know of no independent motivation for such a filter.

Actually, the filter stated is too strong, since sentences like (10.1b') are significantly better than ones like (10.1b).

10.1b' On the wall hung a portrait for fifteen years, until revolutionaries came one day and carted it off.

A more likely candidate would ban inverted subjects that were significantly less heavy than material which followed them. This would stand a chance of being a subclass of some more general constraint on the order of re-orderable elements in clauses.

There is another difficulty in interpreting other putative cases of HNPS applying to inversions, such as that exemplified in 11.6b)

11.6b Climbing over the wall was to our surprise ?*the gorilla/the gorilla that we had seen earlier escaping from the zoo.

The problem here is that, even ruling out the possibility of inversion over VP, and ignoring a derivation by Presentational there-Insertion, HNPS isn't the only plausible route by which the adverbial phrase could have come to precede the pre-inversion subject NP. In particular, these adverbs could have been inserted between the inverted NP and the verb complex by a rule of Niching (Ross 1973) which inserts parenthetical phrases of various structure (e.g. I think, obviously, to no one's surprise) anywhere⁴ in a sentence between major constituents, as in (12).

12. _A The gorilla _A was _A climbing _A into the room _A.

Such parenthetical expressions are ordinarily (always, when "niched") set off from the rest of the sentence by "comma-intonation"--lowered pitch, and pauses before and after. While I have the impression that I can naturally utter examples like (11.6b) without this comma-intonation, that cannot be used to exclude the possibility that it is niching which derives the phrase order, and not HNPS, because all other possible arrangements of the phrases in examples like (11.6b) seem to require the comma-intonation; its apparent absence in 11.6b may be simply a function of its being overshadowed by a greater pause required by HNPS (cf. Postal 1974:137n).

Of course, even if it is niching which is responsible for examples like this, it would have to be explained why the sentences are worse if the final NP is relatively short, since this is not a general condition on niching. To the extent that the existence of a plausible derivation by niching is a valid objection to the claim that inversions change grammatical relations, (ostensibly supported by the fact that after inversion, the pre-inversion subjects may be shifted by HNPS), evidence for inversion types 6b, 6c, and 7b is subject to it, as I am unable to think up plausible examples with non-parenthetical post-verbal material. Only the evidence for types 1a, 2b, 2c, 3, and 7c being the results of HNPS remains unchallenged. Thus for only these types can a *prima facie* case be made that the inversion involved causes the pre-inversion subject to cease to be a subject.

I conclude that Heavy NP-Shift does not offer conclusive evidence in any case that any pre-inversion subjects cease, by virtue of being inverted, to be subjects. But the possibility still exists that in most of the verb complex inversions the original subject has ceased to be a subject. If it has, then either some other phrase, presumably the preverbal phrase, is the derived subject, or there is no surface subject. If some other phrase is the derived subject, then if the grammatical-relation-changing inversion rule is cyclic, as it would be if Johnson's and Postal and Perlmutter's conjectures are correct⁵, the derived subjects ought to be subject to other cyclic, grammatical relation changing rules, and possibly, to affect agreement.

3. Subject Raising as a Test for Subjecthood

Let us proceed to examine these (inversion types 1-7) cases where the post-auxiliary or post-verbal NP can be plausibly considered not to be a subject, to see whether the preverbal phrase in the derived structure is treated as a subject, and if so, if it acts like a cyclic subject, and is treated as such by cyclic rules which affect subjects (e.g. Raising, There-insertion). If it appears to be a cyclic subject, that will be evidence that the preposing and inversion rules which situate it in clause-initial, pre-verbal position, i.e. subject position, are cyclic relation-changing rules. If it appears to be a subject, but not a cyclic subject, then the preposing or inversion rules will be examples of relation-changing rules which appear not to be cyclic (strictly, which cannot be independently argued to be cyclic), and thus will provide counterexamples to one of the generalizations which motivated relational theories of grammar, specifically to the Cyclicity Law, which states that if a rule creates or destroys termhood (i.e. grammatical relations of the status of subject, direct object, or indirect object), then it is a cyclical rule.

For instance, if the preverbal NP is a cyclic subject, it should be subject to Raising into subject position, with such higher verbs as appear, seem, and be likely, and examples like those in (13) should all be acceptable.

- 13.2a At issue seems/seemed to be the right of students to vote on such questions.
- 13.2c *To the fire seems/seemed to have been attributed the loss of over \$1 million.⁶
- 13.5 More significant seems to be the attitude of the Japanese people toward pollution.
- 13.7a Stacked against the wall seemed to be just the amount of lumber they needed.
- 13.7c *Stacked in the corner seemed to lie just the amount of kindling they would need for the winter.

It seems to be only the inversions that put the subject after be plus its auxiliaries that appear to allow the derived pre-verbal phrase to be raised into a higher subject position.⁷ Of course, if these inversions (1a, 2a, 5, 6a, 7a, 7b) are really inversions over VP, rather than over just verb complexes, as mentioned earlier, then subject Raising to Subject need not be invoked to explain sentences like 13.2a, 13.5, and 13.7a; seemed to be is as much of a VP as is is after preposing has applied, and these sentences could be derived just by inversion from structures like those in (14), rather than by Subject-to-subject raising from structures like those in (15).

- 14.2a The right of students to vote on such questions seems to be at issue.
- 14.5 The attitude of the Japanese people toward pollution seems to be more significant.
- 14.7a Just the amount of lumber they needed seemed to be stacked against the wall.
- 15.2a [At issue is the right of students to vote on such issues] seems.
- 15.5 [More significant is the attitude of the Japanese people toward pollution] seems.
- 15.7a [Stacked against the wall is just the amount of lumber they needed] seemed.

Deriving these sentences by a VP inversion-rule applying after Raising would destroy the basis for saying that these inversions feed cyclic rules and change grammatical relations (specifically, that they promote adverbial phrases to subject). The inversions involved could then be considered to be the result of post-cyclic rules which don't affect grammatical relations.

There are two obvious problems with this VP-inversion analysis. First, it is for the most part inconsistent with the VP-inversion explanation for the Heavy NP Shift data. That is, for almost all of the constructions of types 1-7⁸ where VP-inversion (as opposed to verb-complex inversion) makes a correct

prediction about the data in (6) or (13), VP-inversion makes an incorrect prediction about the other set of data. So if it is a correct explanation for the HNPS data, it cannot be correct for the subject-to-subject Raising data, and vice versa. This indicates to me that it is an essentially misguided proposal.

The second obvious problem with this analysis (deriving sentences like (13) directly from structures like those in (14) by preposing and inversion over VP) is that only Raising-derived structures would be subject to this postcyclic inversion. Structurally equivalent structures derived by Equi cannot be inverted, as (16) shows:

- 16.2a *Under discussion wants to be Carter's third nominee for Secretary of Defense.
- 16.5 *More necessary to the American economy determined to be the oil ministers of the OPEC countries.
- 16.7a *Snuggled in Mary's bed wants to be the blue-eyed rug salesman who had visited her earlier.

However, as will be discussed in a little more detail later, it may be that pragmatic functions are more responsible than syntactic considerations for the unacceptability of sentences like (16). The fact that not all A-Raising predicates permit adverbial phrases in superficial subject position, and that, in fact which ones do depends on the meaning and discourse function of the preposing and inversion, as shown in (17), strongly supports such a pragmatics-based explanation.

- 17.2a ?At issue turned out/began to be the right of students to vote on such questions.
- 17.5 More significant turns out/?*tends/*begins/*is certain to be the attitude of the Japanese people toward pollution.
- 17.7a Stacked against the wall turned out/*began/is certain to be just the amount of lumber they needed.

Of course, even if one can defend a pragmatic explanation for apparent counterexamples to a VP-inversion alternative to subject-to-subject Raising as an explanation for the data in (13), the conflict of these data with the HNPS data of (6) strikes me as showing that VP-inversion is ultimately indefensible as an explanation for these data. Moreover, even when a VP-inversion is applied to a structure whose main verb is the tolerant *seem*, if the next verb down is an Equi predicate, the results are ungrammatical, as in (18a), which in this analysis would be derived from a structure like (18b) (which is perfectly acceptable), via a preposed structure like (18c).

- 18a *Under discussion seems to want to be Carter's nominee for Secretary of the Department of Health, Education, and Welfare.

- 18b Carter's nominee for Secretary of the Department of Health, Education, and Welfare seems to want to be under discussion.
- 18c Under discussion Carter's nominee for Secretary of the Department of Health, Education, and Welfare seems to want to be.

Accounting for the unacceptability of (18a) would involve constraints on Raising of a previously unknown sort--constraints on predicates embedded farther down (perhaps indefinitely far down) than the clause (or quasi-clause⁹) immediately commanded by the Raising predicate. This points again to the implausibility of a VP-inversion rule, especially as an alternative account of the Raising data which might be taken to support a claim that inversion creates derived subjects.

Subject-Raising into superordinate object position provides an apparently less ambiguous test. If any of the preverbal phrases in these inversion constructions can be raised to be the object of a higher verb that triggers raising (e.g. believe, expect, consider), then that can be considered evidence that the preverbal phrase has become a subject by inversion, since only subjects can be raised in this construction. But in fact only construction 5 appears to permit raising of the preverbal phrase.

- 19.1a *John believes/expects/considers in the garden (to be) a unicorn.
- 19.3 *John believes/expects/considers into the room to have strode an energetic-looking young doctor.
- 19.5 John believes/expects/considers more significant to be the attitude of the Japanese toward pollution.
- 19.6a *John believes/expects/considers standing in the corner to be an ex-troop commander.
- 19.7b *The FBI believes/expects/considers arrested today to have been Public Enemy Number Three.
- 19.8 **John believes/expects/considers never to have prices been so high.

Thus, only the inversion that goes with Adjective Phrase Preposing can plausibly be considered to be a grammatical relation changing (specifically a subject-creating) rule, if subject-to-object Raising is the criterion.

Presumably we could also use subject-to-subject and subject-to-object Raising to test whether the inverted subjects cease to be subjects by seeing whether they are subject to these subject-sensitive rules. Such an investigation reveals that only the inversions after negative and frequency, degree, and manner adverbs appear to allow the inverted subject to be raised. Illustrative examples are given in (20) and 21.

- 20.1b *A picture of Lincoln seemed/was likely on the wall to hang.
- 19.2a *The moral fiber of the nation seems at issue to be.
- 20.4a *The balloon seems up to have gone/is likely up to go.

- 20.5 *The number of hours they work seems more significant to be.
- 20.6a *A chestnut mare seemed standing in her stall to be.
- 20.8a,e We seem never/often to have agreed to such conditions.
- 20.8cd ??Our pudding seems $\left\{ \begin{array}{l} \text{hardly} \\ \text{no sooner} \end{array} \right\}$ to have arrived $\left\{ \begin{array}{l} \text{when} \\ \text{than} \end{array} \right\}$ he sprang up with a choked cry.
- 21.1b *John believes a picture of Lincoln on the wall to hang.
- 21.2a *John believes the moral fiber of the nation at issue to be.
- 21.4a *John expects the balloon up to go.
- 21.5 *John considers the number of hours they work more significant to be.
- 21.6a *John believes a chestnut mare standing in her stall to be.
- 21.8ae John believes us never/often to have agreed to such conditions.
- 21.8cd ??John believes the pudding $\left\{ \begin{array}{l} \text{hardly} \\ \text{no sooner} \end{array} \right\}$ to have arrived $\left\{ \begin{array}{l} \text{when} \\ \text{than} \end{array} \right\}$ she sprang up with a choked cry.

Does this mean that only the inverted subjects in constructions 8a and 8e remain subjects after inversion? I am inclined to think that it doesn't even mean that: pre-infinitival position is the only possible location for adverbs of this sort if the speaker balks at "splitting" infinitives. In any case, it is a perfectly possible position for such adverbs, regardless of inversion.

As for the other cases, I do not think we are forced to conclude from (20) and (21) that inversion causes demotion of the pre-inversion subject. Indeed, I can think of several possible explanations for the ungrammaticality of sentences where inverted subjects are raised. First, it is possible that subject-to-subject and subject-to-object Raising are in general blocked if anything occurs before the subject which is to be raised. However, the grammaticality of sentences like (22a) and (23a), presumably derived from structures like (22b) and (23b), shows that this is not in general true.

- 21a John seems until very recently to have favored ERA.
- 21b [Until very recently, John favored ERA[] seems.
- 22c *It seems until very recently that John favored ERA.
- 23a I believe John frankly to have sabotaged the whole affair.
- 23b I believe that frankly, John sabotaged the whole affair.
- 23c *I believe frankly that John sabotaged the whole affair.

(The (c) sentences are intended to show that these adverbs could not have originated as main clause adjuncts.)

More difficult to dispose of, however, are three other hypotheses, any one of which alone would account for the unacceptability of the examples in (20) and (21). First, it could be argued that the inversion is always a post-cyclic rule, and even if it does change grammatical relations, it couldn't feed the cyclic rules of subject-to-subject and subject-to-object Raising. Applying it before these rules violates the principles of the grammar; therefore these sentences are, strictly speaking ungrammatical.

Second, it is possible that inversion "freezes" subjects syntactically, so that even non-relation-changing rules will be unable to move inverted subjects. It is certainly true that subjects that have been inverted cannot be questioned, relativized, or topicalized, as the illustrative examples in (24-26) indicate.¹⁰

- 24.1b *What on the wall hung?
- 24.2b *What to this category belongs?
- 24.4a *What up went?
- 24.5 *What very important to the Japanese is?
- 24.6a *Who standing in the corner was?
- 24.7c *What propped against the wall lies?
- 25.1a *John caught the unicorn which in the garden was.
- 25.2a *Vandals slashed three portraits of burghers which under consideration were.
- 25.3 *A handsome man who into the room strode stopped and stared at Mary.
- 25.5 *We have totalled the number of hours they worked, which more significant is.
- 25.6b *Then we spotted the lad, who climbing into our garden was.
- 25.7a *The wood we needed, which stacked in the garage was, had been cut into four-foot lengths.
- 26.1a *A unicorn, in the garden was.
- 26.3 *A handsome young man, into the room strode.
- 26.4a *The balloon, up went.
- 26.5 *The pollution in their bays, very important to the Japanese is.
- 26.7b *Three members of the Williamson gang, arrested today were.
- 26.8a *Mr. Carter, never did expect such a response.¹¹

However, it is plausible that these sentences are impossible for pragmatic rather than simply syntactic reasons.

That is, even supposing that inversions are cyclic (though not grammatical-relation changing) rules, it is possible that there is a conflict between the pragmatic functions of the inversion rules, which move subjects to the right, and whatever pragmatic functions are served by the raising rules that promote subject NPs to higher clause status (higher clause subject status in the case of subject-to-subject raising), and the fronting rules involved in questioning, relativizing, and topicalization, which move NPs to the left. Since, speaking very vaguely, the rightward-moving rules have a rhematizing effect (or function--commenting or highlighting "new" information)--while leftmost, and higher-clause positions tend to be thematic (topical, referring to what the discourse is about), this seems not at all implausible. In fact, I find all of these explanations for the unacceptability of the sentences in (20) and (21) quite attractive. (Note in this regard, that the only acceptable sentences in (20) and (21) are also the only ones that involve an inversion rule which puts the subject before the end of the verb complex, and thus, farther from the rightmost position in the sentence.) These explanations could all be correct at the same time, and the third might in fact provide a reason for the correctness of the second. Even if linear position turns out to have nothing to do with the ungrammaticality of (24) and (26), a pragmatic explanation for these data may still be correct--that is, the functions of the inversions may simply be incompatible with the functions served by these leftward-moving rules; the reader may verify for himself that inverted clauses may not be questioned even if no movement of the inverted subject occurs (e.g. *Does on the wall hang a picture?). Nor may they suffer topicalization (e.g. *The garden, in was a unicorn). Interestingly, pragmatic incompatibility is not a possible explanation for the relativization data of (25); as examples like (27) show, at least some inversions permit NPs other than the pre-inversion subject to be relativized.¹²

- 27.1a ?The formal garden, in which was a small spotted unicorn, had room for little else.
- 27.1b The bedroom wall, on which had hung a picture of Lincoln, was now bare and grimy.
- 27.2b Linguists were late in recognizing this category, to which belong neuter nouns of the third declension.
- 27.6a ?John went to clean the stall, standing in which was a chestnut mare.
- 27.7c The outer wall, propped against which lay a signed Picasso, was covered with several years' growth of ivy and moss.

It is noteworthy that these clauses preserve the structure derived by inversion, which the clauses in (24-26) don't; this difference may be involved in why they are grammatical but (24-26) ungrammatical.

4. Tough-Movement as a test for non-subject-hood

The hypothesis that inversions can change grammatical relations can be tested still further. If the original subject, which after inversion follows part or all of the verb complex, has indeed ceased to be a subject, then we may expect Tough-Movement (TM), or Non-subject Raising, to apply so that it can become the derived subject of such predicates as be easy, be hard, etc. This would require only that inversion be cyclic¹³ so that it could feed the cyclic rule of TM, but this would be quite plausible (or perhaps necessary), given the assumption that inversions change grammatical relations, since one of the claims of at least two versions of relational grammar is that all rules that change grammatical relations apply cyclically. In fact, however, inverted subjects can never be promoted by TM. The examples in (28) are typical of attempts to do this.

- 28.1a *The unicorn was impossible for in the garden to be.
- 28.2c *The fatal errors were easy for to the fire to be attributed.
- 28.3 *The handsome young doctor was easy for into the room to stride.
- 28.5 *The attitude of the Japanese people was easy for more important to be.

Taken at face value, this could indicate that inversions don't change grammatical relations, since if the inverted subjects are still subjects the structural description of TM will not be met, and the sentences of (28) will be ungrammatical for the same reason that those in (29) are ungrammatical.

- 29a. *The unicorn is impossible to be in the garden.
- 29b. *The handsome young doctor was easy to stride into the room.

However, there are a number of reasons why these data should not be taken at face value. First if Berman's (1973) claim is correct, that TM cannot promote NPs which have been moved (or which, at the point of application of TM bear grammatical relations different from those which they bore in underlying representation), then if inversions change grammatical relations, we would predict that none of these examples would be grammatical, since all presumably suffered inversion before TM. However, there is such a difference between the subtle (and idiolectally variable) dysphemism of the sentences in (30), which are typical violations of Berman's "virgin" constraint, and the glaring and universal ungrammaticality of the sentences in (28), that I don't see how Berman's constraint can account for the data in (28).

- 30a John is easy to be fooled by.
- 30b John is tough to consider to be easy to please.

(In (30a) the NP which is the subject of easy was formerly a prepositional object derived by Passive; in (30b), the NP which is the surface subject

of tough has had its grammatical relation changed (been moved) twice: by TM to become the subject of easy, and then by subject-to-object Raising to become the object of consider.)

Second, one could claim that the reason the sentences of (28) are ungrammatical is that they violate another constraint proposed by Berman (1973), which says that TM cannot move a NP over a subject. This analysis predicts that even if inversion changes grammatical relations, and the preverbal phrases in the inversions under investigation (e.g. in (1)) are subjects, the sentences in (28) will be ungrammatical because of Berman's "trans-subject" constraint; non-subjects will be crossing over subjects, and we can not expect the resultant sentences (in (28)) to be grammatical. However, Postal has suggested (as reported in Lawler 1977:234) that while the inverted subject in inversions ceases to be a subject, it is not the derived pre-verbal NP which is the surface subject, but a null dummy. Whether Berman's trans-subject constraint prohibits movement over null dummy subjects, I will not try to guess.

Of course, if the inversions are postcyclic, then there is reason to expect them not to feed TM, and to expect all of the sentences of (28) to be fully ungrammatical. However, in claiming (as reported in Lawler 1977:234) that at least some inversions can feed subject-to-subject Raising, a cyclic rule, Postal has challenged the assumption that they are postcyclic.

Third, if Berman's (1973) analysis of TM is correct, then the sentences of (28) could never have been derived by TM, because its structural description could never have been met. According to Berman, TM structures require an animate dative 'experiencer' NP in underlying representation, and TM cannot apply unless this NP is identical to the subject of the complement clause, and has triggered deletion of the complement subject, under identity to it. This means that the underlying structure of (28.1a) would have to be (31a) or (31b).

31a [The unicorn be in the garden] was impossible for the unicorn.

31b [The unicorn be in the garden] was impossible for in the garden.

If it is (31a), then if the inversion changes grammatical relations, after inversion applies, the embedded occurrence of the unicorn will no longer be a subject, and will not be deleted by the equi-like rule; the result would be (31c).

31c *It was impossible for the unicorn for in the garden to be
 ϕ /it/the unicorn.

And it cannot be (31b) because abstract NP's like in the garden cannot be experiencers if the term has any semantic import whatever, and as the impossibility of all the alternatives in (31d) indicates.

- 31d *It was impossible for in the garden for a unicorn to be ϕ /there/in the garden.

Finally, the remarks about possible differences in the pragmatic functions of inversion and raising made above apply equally here; if inverting a subject de-topicalizes it, what would be the point of re-topicalizing it by TM? As above, a pragmatic account of the unacceptability of the sentences in question claims that they are dumb, or bizarre, but not strictly ungrammatical.

5. There-Insertion as a test for subjecthood.

A further test of the hypothesis that verb-complex inversions change grammatical relations may be sought in the rule of ordinary there-Insertion, which affects subjects, demoting them and replacing them with a "dummy" subject, there, as in (32).

- 32a A cat was in the catnip.

- 32b There was a cat in the catnip.

If there-Insertion applies to move the preverbal phrase, this may be considered evidence that such phrases are indeed subjects, and since there-Insertion is a cyclic rule, evidence that Inversion is cyclic.¹⁴ As the examples in (33) show, in many cases it does appear that grammatical sentences may be derived by subjecting the output of Inversion to ordinary there-Inversion.

- 33.1b There hung on the wall a picture of Marx.

- 33.2c *There were to the fire attributed several deaths and countless injuries.

- 33.4b ?There comes here a bus.¹⁵

- 33.5 *There was more significant to the Japanese a claim about the pollutants in their waters.

- 33.7a There was stacked in the garage more than a cord of wood.

- 33.7c There stood propped against the painting an old brass key.

- 33.8a There was never any man praised so highly.

These results can not, however, be taken as unambiguous evidence that any inversions are subject-creating grammatical relation changing rules. The most telling argument against deriving the grammatical sentences among these via the conventional there-Insertion rule is that it is not obvious how the preposed adverbial constituent can be considered an indefinite NP--something required of the subject that is demoted by conventional there-Insertion. Moreover, several of the grammatical examples admit of at least

two derivations, with no evident difference in meaning or use. For example, they could be derived as described above, and schematized in (34), or derived by a rule of Presentational there-Insertion (PresTI), which puts the pre-PresTI subject in sentence-final rather than post-copular or post-verbal position, as schematized in (35) and exemplified in (36).

34a Input: Subject-X - V - Y-Constituent

34b Preposing: Constituent - Subject - X - V - Y

34c Inversion: Constituent - $\left\{ \begin{array}{c} \text{Auxiliary} \\ X - V \end{array} \right\}$ - ex-Subject $\left\{ \begin{array}{c} Z \\ Y \end{array} \right\}$ - V - Y

34d There-Ins. There - $\left\{ \begin{array}{c} \text{Aux.} \\ X - V \end{array} \right\}$ Constituent - Ex-Subj. - $\left\{ \begin{array}{c} Z \\ Y \end{array} \right\}$ - V - Y

35a Input: Subject X - $\left\{ \begin{array}{c} V \\ \text{be} \end{array} \right\}$ - Constituent

35b PresTI: There X - $\left\{ \begin{array}{c} V \\ \text{be} \end{array} \right\}$ - Constituent - Ex-Subject

36a A unicorn was in the garden.

36b There was in the garden a unicorn.

This is most plausible for inversions of types 1b, 3, 6c, and 7c, where the verb is not an existential, and the logical subject need not be definite (illustrated in (37)), as required for conventional there-Insertion.

37.1b There hung on the wall the \$1 million Picasso.

37.3 There strode into the room the three men who had been lurking in the garden.

37.6c There came stalking into the room the old gentleman with the brass-tipped cane.

37.7c There stood propped against the wall the missing Picasso from the Blue Period.

(Example (33.8a) could not be plausibly derived by PresTI, however.) Or a more conventional there-insertion could have applied in all of these without any preposing or inversion and in (33.8) as well, with HNPS applying in all but (33.8). This is schematized in (38) and exemplified in (39).

38a There-Ins.: There - $\left\{ \begin{array}{c} V \\ \text{be} \end{array} \right\}$ - Ex-Subject - X

38b HNPS: There - $\left\{ \begin{array}{c} V \\ \text{be} \end{array} \right\}$ - X - Ex-Subject

39a There was a unicorn in the garden.

39b There was in the garden a unicorn.

The best argument against this last alternative is that, contrary to what is usually the case with HNPS, the shifted NP doesn't have to be very heavy--as in (39), where a unicorn is "heavy" enough. Furthermore, the demoted subject doesn't have to be indefinite, as in (40).

- 40.7c There stood propped against the wall the missing Picasso from the Blue Period.

These alternatives will be examined more closely elsewhere (Green, Forthcoming), where the goal will be to determine the nature of the relations among quadruples of sentences like (41).

- 41a An old umbrella was standing in the corner.
 41b Standing in the corner was an old umbrella.
 41c There was an old umbrella standing in the corner.
 41d There was standing in the corner an old umbrella.

But, for the moment, I think the results of the present investigation can be summed up by saying that there is no clear and convincing evidence from there-constructions that any of the inversions change grammatical relations, or reflect a change in grammatical relations (effected, say, by the preposing rules). From other evidence the best candidate for such a change is construction 5, the inversion after Adjective Phrase Preposing (cf. table I above), but the there-insertion data contradicts the claim that the adjective phrase is a derived subject; the sentence-initial adjective phrase cannot be moved and "demoted" by there-Insertion. If the there-Insertion data can be discounted, it remains a candidate.

6. Verb-agreement as a test for subjecthood.

A final grammatical function which could conceivably yield evidence regarding derived grammatical relations here is verb agreement. If the phrases which are immediately preverbal after preposing and inversion are grammatical subjects, the verbs should agree with them, and be third person singular, regardless of the grammatical number of the pre-inversion subjects. The reason that the verb would be expected to be in the third person singular form is that the adverbial and adjectival phrases which appear in preverbal, "subject" position are all non-referential, and third person singular is the form used for non-referential subjects, as shown in (42).

- 42a That Bill left, and that Mary is mad about it is/*are obvious.
 42b All that I could see was/*were two chickens.
 42c What I saw was/*were two chickens.

However, as (43) shows, the verbs agree with the original, referential, post-verbal or post-auxiliary NPs, not the non-referential phrase in initial, "subject" position.¹⁶

- 43.1a In the garden ^dwas/were two unicorns.¹⁶
 43.2c To the fire *was/were attributed the deaths of three tenants.
 43.4a Up ^dgoes/go the balloons.
 43.5 More frightening to the Japanese *is/are the dangers of pollution.
 43.7b Arrested today *was/were three members of the Chicago underworld.
 43.8 Never *was/were two people so surprised.

Since agreement is always with the pre-inversion subject NP, there appears to be no evidence from verb agreement (VA) that inversion affects or reflects a change in grammatical relations. However, since grammatical-relation changing rules are attested, e.g. there-insertion, where agreement is not with the derived subject, (there), but with the ex-subject (cf. Morgan 1972a,b for fuller discussion), as in (44), one might not want to even consider the evidence of (43) relevant.

- 44a There was/*were a man on the grounds.
 44b There *was/were two men in the castle.

However, agreement with the ex-subject seems to occur only when the derived subject is a "dummy" like there. This is one of the differences between (44) and (42b,c). Since the preposed phrases that occur pre-verbally after inversion in these constructions are clearly not dummies, but make reference to the specifics of the discourses they occur in, rejection of (43) as evidence that inversion neither effects nor reflects a change in grammatical relations is not obviously a necessity. On the other hand, it seems to be partly because of evidence similar to that in (43) that Postal has proposed that the subject in at least one inversion is a null dummy; that way the Dummy Agreement Law, quoted in (45), predicts that agreement will be with the inverted "ex"-subject.

45. The Dummy Agreement Law: A verb whose cyclic subject is a dummy either doesn't agree at all, or else agrees with its cyclic subject's brother-in-law. (A dummy NP and the *chômeur* that its insertion creates are brothers-in-law.)

So, VA, like the other processes considered, fails to provide clear evidence that the inversions either effect or reflect changes in grammatical relations. Agreement is always with the original subject, and while this doesn't indicate that that NP is still the subject, the fact that apparent (3rd person singular) agreement with the initial phrase seems to occur only in cases where a plural subject or brother-in-law could have a singular verb gives us no reason to suspect that any of the surface-initial phrases are derived subjects.

7. Conclusion

We are left then, with no clear answer to the question raised at the outset: do inversions change grammatical relations? And I think, with a certain sense of frustration at not being able to deduce an answer. This should cause us to reflect on the situation a moment, and ask why we cannot have an answer. Is it simply because we don't know enough about constraints on processes we used as criterial to use them as tests here? (Some linguists (cf. Bresnan 1976) would take sentences like (6.1b) and (6.2c) as evidence that HNPS can apply to subjects.) Or are we getting inconsistent results because we have incorrect, or, horrible dictu, inconsistent, assumptions about the nature of grammatical organization and the functions of grammatical rules? I am thinking here of assumptions about

- 1) the necessity for a sentence to have a subject (at all stages in its derivation¹⁷).
- 2) the relation of cyclicity to the property of changing grammatical relations.
- 3) pragmatics, particularly the relationship of form and function, and whether this is something for a grammar to describe, and whether function bears on the formulation rules of syntax.
- 4) the place of notions like "null dummy" in any kind of grammatical theory.

I am not prepared at this point to answer these questions, but I am eager to examine any answers or observations that may be offered

Footnotes

* The research reported herein was supported in part by Grant SOC 75-00244 from the National Science Foundation.

¹The inversion for which this argument has been made appears to be a member of the set represented by example (2c). The inversion cited in this argument (summarized in Lawler 1977) is To the states is entrusted the power to regulate education. It is claimed in Postal 1977 that inversion structures of type 5 also involve demotion of the pre-inversion subject. The cited examples are Obvious to everyone is the fact that Melvin is crazy and Unable to attend were the chairman and vice-chairman.

²The do so-test rests on the claim that do so pronominalizes VPs; if do so occurs in a sentence with an adverb following it, then that adverb must be outside the VP. Thus locative adverbs are outside, but directional adverbs are inside the VP:

- i. John threw up in the garden, and Mary did so on the patio.
- ii. *John threw up into the sink, and Mary did so into the bathtub.

Examples indicating that manner and duration adverbs are outside VP are (iii) and (iv).

- iii. John hung the picture perfectly straight, but Bill did so crookedly.
- iv. John stood in the corner for 3 minutes, and Bill did so for an hour.

The fact that in sentences like (v), we infer that Bill hung the picture crookedly too, is irrelevant because adverbs present in one half of a conjoined structure are apparently always interpreted as applying to the other half as well if there is nothing to prevent this, as exemplified in (vi-x):

- v. John hung the picture crookedly, and Bill did so too.
- vi. John went to Ohio on Thursday, and Bill went to Maryland.
- vii. John went to Ohio on Thursday, and Bill went on Friday.
- viii. John wrote a book when he was 10 and so did Marvin.
- ix. John wanted to eat potatoes yesterday, and Bill did too.
- x. Mary wanted desperately to win, as did Joan.

This was pointed out to me by Jerry Morgan.

³The plausibility of such derivations is discussed in Green, forthcoming.

⁴This is surely a great oversimplification. But there is no question that such parenthetical expressions have several possible places in many sentences.

⁵Cf. Postal and Perlmutter's Cyclicity Law: If a rule creates or destroys termhood, it is a cyclical rule.

⁶I find this sentence grammatically unacceptable, though semantically perfectly fine, and find other expressions of the same content (such as (i) and (ii)) grammatically much better.

- i. ?It seems that to the fire was attributed the loss of over \$1 million.
- ii. The loss of over \$1 million seems to have been attributed to the fire.

Others find (13.2c) as good as (i).

⁷This strikes me as a very curious and suspicious fact, but I do not know quite what to make of it.

⁸Types 7a and 7b are the only exceptions, as indicated on the chart in Table 1.

⁹Cf. Postal 1974: 232-240.

¹⁰ If inversion creates derived surface subjects, the WH-Questioning of inverted and demoted subjects with main verb be, and the "progressive" and "passive" be's of constructions 2a, 6a, 6b, 7a, 7b will yield sentences which are indistinguishable from the WH-Questioning of their uninverted counterparts, since Subject-Auxiliary-Inversion (SAI) will return the preposed, derived "subject" phrases to postcopular position. That is, sentences like (i.2a) and (i.6a) could be derived either by WH-word Insertion alone, or by Inversion followed by WH-word insertion, WH-word preposing, and the SAI that obligatorily accompanies it.

i.2a What is at issue?

i.6a What is standing in the corner?

The latter sort of derivation would be possible only if the derived preverbal phrase counts as a subject, for if it does not, SAI will not apply, and ungrammatical sentences like (ii.2a) and (ii.6a) will result.

ii.2a *What at issue is?

ii.6a *What standing in the corner is?

Of course, if Inversion creates derived surface subjects, SAI will also apply (after do-support) to sentences like (24.1b) and (24.4a) yielding the equally ungrammatical forms in (iii):

iii.1b *What did on the wall hang?

iii.4a *What did up go?

Relativizing inversions of type 8 likewise gives results which are indistinguishable from relativization of non-inverted subjects.

¹¹ While this string of words certainly corresponds to a grammatical sentence, it is not grammatical if pronounced with the initial high pitch (disassociated from stress, which may occur anywhere in the low-pitched remainder of the sentence) characteristic of Topicalization.

¹² Inversions over be are mysteriously resistant to even this relativization--notice how (27.1a) is improved by substituting grazed for was.

¹³ At least some inversions could not be precyclic (e.g. 2c, 7), since they take passive structures as their input.

¹⁴ At least some inversions could not be pre-cyclic (e.g. 2c, 7), since they take as input structures derived by the cyclic rule of Passive.

¹⁵ The result of applying there-Insertion to inversions of types 4a and 4b sounds grammatical to me, but distinctly archaic.

¹⁶ Sentences marked with a superscript 'd' are ones whose agreement pattern sounds familiar to me (some more than others), though I don't think I would use them myself. Verb agreement is a highly complex matter when the subject follows the inflected verb (cf. Green and Morgan, Forthcoming), but there may be a correlation between the use of the 'd'-marked sentences and agreement in other sentence types where the subject follows the inflected verb, such as questions and there-Insertion sentences like (i) and (ii).

- i. There ^dwas/were two unicorns in the garden.
- ii. What ^dwas/were those balloons tied to?

¹⁷Or at all levels of description, if derivation is a misleading descriptive term.

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STUDIES IN EAST ASIAN LINGUISTICS

Edited by
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and
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VOLUME 7, NUMBER 2
FALL, 1977

DEPARTMENT OF LINGUISTICS, UNIVERSITY OF ILLINOIS
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the following: (1) the patient's general condition; (2) the patient's mental condition; (3) the patient's physical condition; (4) the patient's social condition; (5) the patient's economic condition; (6) the patient's educational condition; (7) the patient's religious condition; (8) the patient's moral condition; (9) the patient's political condition; (10) the patient's cultural condition; (11) the patient's artistic condition; (12) the patient's scientific condition; (13) the patient's literary condition; (14) the patient's musical condition; (15) the patient's dramatic condition; (16) the patient's athletic condition; (17) the patient's sporting condition; (18) the patient's gaming condition; (19) the patient's gambling condition; (20) the patient's drinking condition; (21) the patient's smoking condition; (22) the patient's eating condition; (23) the patient's sleeping condition; (24) the patient's dressing condition; (25) the patient's grooming condition; (26) the patient's hygiene condition; (27) the patient's health condition; (28) the patient's vitality condition; (29) the patient's energy condition; (30) the patient's endurance condition; (31) the patient's strength condition; (32) the patient's speed condition; (33) the patient's agility condition; (34) the patient's coordination condition; (35) the patient's balance condition; (36) the patient's posture condition; (37) the patient's gait condition; (38) the patient's voice condition; (39) the patient's speech condition; (40) the patient's writing condition; (41) the patient's reading condition; (42) the patient's thinking condition; (43) the patient's feeling condition; (44) the patient's emotion condition; (45) the patient's passion condition; (46) the patient's desire condition; (47) the patient's will condition; (48) the patient's power condition; (49) the patient's influence condition; (50) the patient's authority condition; (51) the patient's leadership condition; (52) the patient's management condition; (53) the patient's organization condition; (54) the patient's administration condition; (55) the patient's supervision condition; (56) the patient's control condition; (57) the patient's direction condition; (58) the patient's guidance condition; (59) the patient's instruction condition; (60) the patient's training condition; (61) the patient's education condition; (62) the patient's learning condition; (63) the patient's knowledge condition; (64) the patient's skill condition; (65) the patient's ability condition; (66) the patient's talent condition; (67) the patient's genius condition; (68) the patient's intellect condition; (69) the patient's mind condition; (70) the patient's soul condition; (71) the patient's spirit condition; (72) the patient's heart condition; (73) the patient's love condition; (74) the patient's affection condition; (75) the patient's friendship condition; (76) the patient's relationship condition; (77) the patient's connection condition; (78) the patient's association condition; (79) the patient's participation condition; (80) the patient's contribution condition; (81) the patient's service condition; (82) the patient's contribution condition; (83) the patient's service condition; (84) the patient's contribution condition; (85) the patient's service condition; (86) the patient's contribution condition; (87) the patient's service condition; (88) the patient's contribution condition; (89) the patient's service condition; (90) the patient's contribution condition; (91) the patient's service condition; (92) the patient's contribution condition; (93) the patient's service condition; (94) the patient's contribution condition; (95) the patient's service condition; (96) the patient's contribution condition; (97) the patient's service condition; (98) the patient's contribution condition; (99) the patient's service condition; (100) the patient's contribution condition.

FOREWORD

This is the fifth special issue of *Studies in the Linguistic Sciences* (SLS) devoted to area linguistics. Previous area-oriented issues were Hindi Syntax (Fall 1971); Baltic Linguistics (Fall 1972); South Asian Linguistics (Fall 1973); and African Linguistics (Fall 1976). The dozen or so papers included in this issue represent an active, on-going interest in East Asian linguistics in the Department of Linguistics on the part of graduate students and faculty members. Over the years, ten doctoral dissertations and over twenty-five masters theses have been written in this area. This present collection of papers is representative of some recent studies. We present it to our friends and colleagues for both critical review and words of encouragement.

This volume reflects a change in editorial policy for the SLS. The Editorial Board recently decided to include papers from outside the University of Illinois, Urbana-Champaign, on an invitational basis. We are happy to include two such papers in this issue; one by John S. Rohsenow, Assistant Professor of Chinese in the Department of Linguistics, University of Illinois, Chicago Circle, and another by Soo-Hee Toh, Visiting Scholar from Chungnam University, Taejon, Korea, where he is an Associate Professor of Korean.

This issue also inaugurates a section on reviews. Future issues will include review articles as well as reviews. It should be noted that the reviews included here are not a part of East Asian Linguistics.

Chin-chuan Cheng
Chin-W. Kim

CONSPIRACY IN KOREAN PHONOLOGY REVISITED:
AS APPLIED TO HISTORICAL DATA

Sang Oak Lee

In a series of articles, C.-W. Kim has shown that there are two distinct tendencies in the sound pattern of Korean: (1) a tendency to close, and (2) a tendency to decentralize. Starting with an overview of the issue in section 1, I complement Kim's data with some critical comments in section 2. In sections 3-6, about 50 cases are categorized as either for or against Kim's proposals. In section 7, several general remarks are given such as distribution of deletion rules, rarity of vowel rules, 'functional load' of rules, etc. The conclusion I draw is that historical data do not render definitive support for Kim's principles, nor invalidate them.*

1. Chin-W. Kim advances in a series of papers (Kim 1968, 1969, 1970, 1971, 1972a, 1972b, 1973a, 1973b) an insightful idea about the conspiracy of "close and peripheral articulations" in Korean. By "the principle of close articulation" (or "the principle of implosion"), he means the tendency to minimize the aperture between the upper articulator and the lower articulator in producing speech sounds. Thus, it is a metacondition concerning the manner of articulation in Korean. And by "the principle of peripheral (or centrifugal) articulation", he means "an articulatory predilection for peripherality", i. e. a tendency to articulate sounds in labial or velar regions in Korean phonology. Thus, it is a metacondition on the place of articulation. He thinks that these language-specific phonological metarules may appear in different shapes throughout the phonological component.

As Kiparsy (1972) properly points out, it seems that Kim's term, 'conspiracy', stands for "a deeper phonetic parallelism between apparently diverse phonological processes in the language" rather than its ordinary meaning. The issue of conspiracy or functional unity of phonological rules, no matter what its real definition is, has so far been discussed mostly in relation to synchronic processes. Here I will try to shed more light on this issue by investigating historical changes from the functional viewpoint. To the best of my knowledge, nobody has stated whether one has to restrict the scope of this metacondition within specific synchronic data or expand it all through available historical data to find the corresponding tendencies. At any rate, it will be very useful to survey all the synchronic and diachronic changes in the language at issue.

Kim's original arguments for the conspiracy of close articulation amount to five superficially unrelated items, cf. Kim 1968, 1969, 1970, 1971, 1972a, 1973a. In addition, as the co-conspiracy to the above, that

is, the conspiracy of peripheral (i. e. grave or non-coronal) articulation is argued in six items, cf. Kim 1972b. (Two of them were replaced by new items in a revised article (1973b) but the total remains the same.) Needless to say, his arguments in each item are based on specific 'rules', and he tries to show interrelationship among them. Therefore, I have set up an approach as follows in order to review his 'metarules' historically.

I have examined about eighty rules occurring in the phonological history of Korean mainly based on Ki-Moon Lee (1972a, b) and determined that about fifty rules are phenomena relevant to our issue, regardless of whether they are for or against Kim's proposals. In detail, the rules are distributed as follows. Some rules are counted twice. The figures in the 'pro' column include a number of Kim's original arguments. See §2. Also see §§3-6 for details.

	pro	con	total
close articulation	11 (cf. §2.1, §3)	12 (§4)	23
peripheral articulation	21 (§2.3, §5)	17 (§6)	38
total	<u>32</u>	<u>29</u>	61

As a rough approximation, the ratio between pro and con is 11 to 10. However, this ratio cannot be regarded as evidence either for advocating or refuting Kim's proposals, since I have not counted in the relative importance and frequency, in other words, a sort of 'functional load' of each rule in the language. It would be desirable to pursue the study of 'functional load' further, since, as far as I know, nothing has been done on it so far, cf. Meyerstein 1970.

Note also that some rules counted here are probably just minor rules and there are possibilities for collapsing some of them. In addition, I may have excluded some rules inadvertently.

2. On several occasions, Kim draws examples for his arguments from historical changes. In Kim (1973b), an argument for closed syllable formation is supported by a comparison between Old Japanese and (Middle) Korean. Both epenthesis of *ŋ* and a process of changing some palatalized alveolars to velars (timchi → cimchi → kimchi 'pickled vegetable'; in fact, the final vowel was -ay, which later became -i, cf. (30) in §5.) are historical changes. Kim (1972b) also took a case of vowel shift in Middle Korean as such an example, though it seems that he withdrew this argument later (cf. Kim 1973b).

In addition to the above, there are some rules which apply to Middle and/or Modern Korean as well as Present-day Korean. In this case, Kim tends to take examples exclusively from Present-day Korean. I will show how his arguments can be supported more by historical evidence in the next 2.1 and 2.3.

2.1. To reconsider historically his arguments for close articulation in the order that he presented in Kim (1972a): (1) a neutralization rule in which affricates and fricatives become stops in preconsonantal and word-final positions already occurred in two steps: c → s in the fifteenth century (cf. (12) in §4) and s → t in the early sixteenth century (cf. (4) in §3). (2) Historical evidences of a change w → p / __C will be mentioned in §3 (1). (3) in the fifteenth century the unreleasing of the syllable-final consonants had already developed completely, so even p at the end of a syllable or a word were pronounced as [1] and nasal sounds were seemingly unreleased in the same environment according to K.-W. Lee (1972b). (4) A case of raising vowel a to ə was already revealed in Modern Korean material (later edition of Samganghaengsilto 三綱行實圖, 1730): taoyya → təə 'become and so', haya → həə 'do and so'. (5) Intervocalic (medial) three-consonant cluster simplification already existed in Middle Korean. (It seems that Kim was not sure whether he takes this example as an argument for close articulation or for peripheral articulation, cf. Kim (1972a, b). Since he deleted it from Kim (1973b) it may be regarded that he concluded it to be a case of close articulation.)

2.2. Though he did not mention diachronic evidence as above, I will take his five arguments for close articulation as my working criteria or guideline in my historical review henceforth. Here, for the reader's convenience, I will quote his chart showing degrees of aperture. (Kim 1972a:167) Change toward 0 will be interpreted as being in favor of the close articulation principle and toward 8, against it.

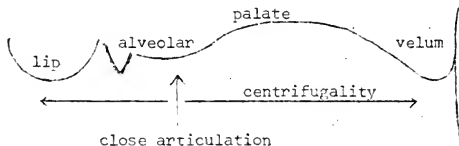
Degree of Aperture	Segments	Examples
0	unreleased stops	t ^o d ^o
1	released stops	t d
2	affricates	c j
3	fricatives	s z
4	liquids	l r
5	glides	y w
6	high vowels	i u
7	mid vowels	e o
8	low vowels	æ a

Turning to the peripheral articulation, the following table (Hyman 1975:32) will be useful. Change toward grave (non-coronal) sounds will be considered as being in favor of the peripheral articulation and toward acute (coronal), against it.

grave	acute
labial C's	dental/alveolar C's
velar C's	palatal C's
back V's	front V's

Grave sounds are made at the periphery of the oral cavity producing a concentration of energy in the lower frequencies of the sound spectrum; acute sounds are made in a non-peripheral (or medial) part of the oral cavity with a concentration of energy in the upper frequencies of the sound spectrum.

Kim (1973b) shows a diagram in which centrifugality and the principle of close articulation in Korean have a complementary and horizontal-vertical relationship to each other.



Though he said in personal communication that he did not intend to put a boundary of centrifugality on the apico-alveolar region with any preciseness, as shown in the diagram, it is more convenient to assume that a sort of boundary is located in this position in order to give an internal order among acute sounds such as dental, alveolar, and palatal consonants and to explain the direction of palatalization as a case from central (dental) to less central (palatal) and eventually toward peripheral area. Cf. (14), (26), (29), and (30) in the following sections.

2.3. Again, there is also historical evidence for his arguments for the peripheral articulation. Let us check the two versions of his arguments in the order that he presented. Old version (1972b) is abbreviated as O, and new version (1973b) as N.

(O&N 1) The first argument is for a consonantal assimilation that Martin (1968) calls 'apical instability'. Besides the fact that there were no neutralizations between s and c and between s and t in the final position (These two pairs of sounds were distinguished in the 15th century. Cf. (12) and (4).), all other changes that Kim mentions are likely to have happened historically. In other words, to exclude s and c in the following rule, [-cont] and [+ant], were necessary in the 15th Korean phonology as in (a) but c and s are implied in t (cf. (b)) by neutralization in the later periods. (a)=(b).

$$\begin{array}{lcl}
 \text{(a)} & \left[\begin{array}{c} \text{-syl} \\ \text{-cont} \\ \text{+cor} \\ \text{+ant} \end{array} \right] & \rightarrow \left[\begin{array}{c} \text{-cor} \\ \text{+ant} \end{array} \right] / \underline{\hspace{1cm}} \left[\begin{array}{c} \text{-syl} \\ \text{-cont} \\ \text{-cor} \\ \text{+ant} \end{array} \right] \\
 \text{(b)} & n \rightarrow \left[\begin{array}{c} [q] \\ [m] \end{array} \right] & t \rightarrow \left[\begin{array}{c} [k] \\ [p] \end{array} \right] / \underline{\hspace{1cm}} \left[\begin{array}{c} [k] \\ [p] \end{array} \right]
 \end{array}$$

(O&N 2) There were already examples of umlaut at the turn of the 19th c. Interestingly enough, among those examples, there is a case where r (which is [-grave]) intervenes between two vowels (kwansōngjegunmyōngsōng-

kyŏng ŏnhae 閑聖帝君明聖經諺歸 1885): tari- 'boil down' → tayri- [teri], kitari- 'wait' → kitayri- [kiteri]. As for the case of intervening r in Present-day Korean, see Cook's comment (1973).

As shown in the table of grave/acuteness, r belongs to central (acute) consonants. However, according to Kim's original proposal (1972b, 1973b), only a peripheral (grave) consonant such as p, ph, m, k, kk, ŋ (r is excluded!) can intervene between two vowels which are involved in the process of umlaut (cf. (44) in §6). "That is, umlaut is prevented just in case the intervening consonant is central, for otherwise, it would create too much centrality." (Kim 1973b:276-7).

Note that c and ch, which are acute consonants, can also participate in the umlaut process in a different sense from the intervening consonants as above.

chuki- → chuyki- [chūgi], or chuyki- → chyuyki- [chyūgi] 'moisten'
puchuyki- → puchyuyki- [puchyūgi] 'stir up'
coki- → coyki- [cōgi] 'break'

In this case, umlauting of o and u is restricted to environment only after c and ch (and probably s, ss, and t). Cf. K.-M. Lee 1972:202, 228; P.-K. Lee 1970:378. Unlike the case of r, these c and ch are not intervening but preceding consonants. Therefore, these acute consonants made the following vowel o and u (which had been quite resistant to umlaut up to the 19th c.) easy to umlaut, since umlaut is a process of changing back (grave) vowels to front (acute) vowels.

(N 4) Kim (1973b) makes a good use of the historical fact that a word ending in an open syllable (CVCV) in Old Japanese corresponds to that in a closed syllable (CVC) in Middle Korean. In addition to the Present-day Korean examples of particle -m, -ŋ, and -k (grave consonants), there are also earlier examples in MK (K. ㄴ. Lee 1972a:165-167).

-ko 'and' verbal ending + m repetitive particle
-kō 'and' verbal ending + k emphatic particle
-myə 'and' (+ -m verbal noun + yə postposition) + ŋ emphatic particle

However, the postposition n can be also added excrescently, though n is an acute consonant.

-ko 'and' verbal ending + n postposition

Martin (1973), however, presents a conjecture that those words which Kim assumes to have picked up an excrescent p, m, k, or ŋ either had the final consonant to begin with or have added a meaningful suffix.

(O 5) Kim (1972b) suggests a controversial argument on the direction of push (or pull) chain in the Korean vowel shift. The traditional view of vowel shift advocated by W.-J. Kim (1963) and K.-M. Lee (1972a,b) is as follows.



However, W.-J. Kim presupposes a vowel shift in the middle of the 17th century, while Lee sets its date far earlier in the 14th century.

Chin-W. Kim (1972b) maintains a quite different direction of push-chain as follows.



His argument neither indicates the approximate date of this change nor illustratively shows the whole picture of the vowel system, especially back vowels. It seems that he tries to argue for the backing of i to e as the initiator of this vowel shift. However, it is highly doubtful that this argument can be supported by any historical evidence. In fact, he withdraws this argument in his new version (1973b).

(N 5 = O 6) Epenthesis of ŋ to avoid hiatus is a well-known strategy in the history of Korean phonology as Kim (1972b, 1973b) mentioned and as shown in (24) of section 5.

(N 6) As presented in Kim (1973b) and in (14), (29), and (30) of this paper, there is not only palatalization but also depalatalization in historical data.

I have demonstrated that the above arguments for peripheral articulation can also be supported by historical evidence. Now I would like to comment on the rest of Kim's arguments not from an historical viewpoint but in terms of a general appraisal.

(O 3) It is not always true that the peripheral consonants remain when consonant cluster simplification occurs as Kim claims. As will be shown in (16) in section 4, there are cases where two medial consonants occur consecutively. Since neither is a peripheral consonant, the principle of peripheral articulation cannot apply in this case. (Furthermore, these are counter-evidence to the principle of close articulation.)

an̥c + kəra → [an̥k'əra] 'sit down' (': glottalized consonant)
 h̥aŋth + ko → [h̥alk'o] 'lick and'
 koŋg̊ + kwa → [koŋgwa] 'direction and'

Moreover, in my idiolect, and probably in Standard Korean, there is a case where peripheral consonants are deleted rather than medial consonants.

ccarp + ciman → [c'alc'iman] 'though short'
 ccarp + ko → [c'alk'o] 'short and'

The following example is quite ambiguous since either medial consonant r(→[l]) or peripheral consonant ph(→[p°]→[m]) survives. (°: unreleased)

irph + ninta → [ilninta] or [imninta] 'is reciting'

Notice that Kim(1973b) does not include this cluster simplification in his new version, probably because of the above fuzzy point as I showed.

(N 3 = 0 4) The claim that peripheral consonants appear dominantly in final positions is not viable unless the frequent use of r, n, s, and ss (medial consonants) can be explained.

3. As rules in favor of the principle of close articulation, I think the following cases are applicable.

(1) As Kim (1968, 1972a) suggests a rule $w \rightarrow p / __C$ for the so-called p-irregular predicates in Present-day Korean, a similar line has to be maintained in the 15th c. for the same group of predicates. The only difference is that fricative β (instead of w) changes into stop p before consonants.

nuβə--nupko 'lie down and'
 toβa--topko 'help and'

(2) The same direction of change, β → p, occurred in the 15th c. after h, k, and t, but it is a minor rule limited to the morpheme -βi- as suggested by Lee (1972b:44).

cəh + βi- → cəh + pi- (→cəphi-) 'fear'
 kisk + βi- → kisk + pi- → kisp-i- 'be happy'
 mit + βi- → mit + pi- 'be believable'

(3) Word-final h turned into t before n in the Late MK(Middle Korean): fricative → stop.

nyeh + nan → nyet.nan (→ nyennan) 'put into'

This is a change not only from fricative to stop but also from glottal to dental, so it can also be involved in section 6. Also, one may posit an intermediate stage of s between h and t as in Kim (1970). In fact, change s → t is attested in the texts of the same period as (5) below.

(4) Assuming that the vowel shift happened in the 14th c.(before the beginning of the Late MK period), a in a non-initial syllable changed into i as the first step of its merger with other vowels between the 15th and the end of the 16th c. This is a tendency toward close articulation: low vowel → high vowel.

kirama → kirima 'packsaddle'

(5) Syllable-final s neutralized into stop t around the beginning of the 16th c.: fricative → stop.

is + nani → itnani (→ innani) 'tie, so'

Kim (1972a) had already noticed this change but he did not separate affricates from fricatives in his synchronic rule formulation. In historical phonology, the case of affricates is treated as (12).

(6) The fricative x (ㄱㅈ), which appears only in initial position, had existed up to the middle of the 17th c., but changed to the stop kh (ㄱ) from the period of the Nogŏlttae ŏnhae 老乞大諺解 (1670).

xyə → khyə 'pull'

Note that rules from (1) through (6) are a change from fricatives to stops except (5). Dressler (1974) shows that child language and diachronic change often give conflicting evidence concerning natural processes; e.g., in the former fricatives are often replaced with stops while the reverse rarely occurs, but in the latter stops often develop into fricatives while the reverse rarely occurs. It is likely that the above cases in Korean are against his generalization.

4. On the contrary to the above section, I encounter some "counter-conspiracies" to the principle of close articulation as follows.

(7) Intervocalic t in Old Korean changed into r in MK: stop → liquid.

*pater → parar 'sea'
 *kater → karar 'leg'
 *hater → hara 'a day'

Also, change from t to r in the following morphemes (when preceded by vowel or r) is found in MK and even today.

-ta → -ra finite verb ending
 -to- → -ro- exclamatory prefinal ending
 -tə- → -rə- past tense
 -taβay- → -raβay-, -taβ- → -raβ- derivative ending for descriptive verb

(8) Reconstructions show that syllable-final -p, -t, and -k of the entering tone in Classical Chinese had changed into -b, -d, and -g and again into -β, -r, and -γ. This stage (-β, -r, -γ) was reflected in Sino-Korean sounds of the 12th c. materials. In China, these -β, -r, and -γ were merged into -r around the 14th c.

In Late Old Korean (ca. 8-9 c.), Sino-Korean sounds were established as -p, -r, and -k, since Korean imported sounds of a Chinese dialect after they experienced a weakening of [$*t \rightarrow d \rightarrow \emptyset \rightarrow r$]. In the 15th c., Sino-Korean sounds still maintained a -p, -r, and -k system. However, there were still some exceptional words which seemingly kept final dental-alveolar obstruents as follows.

toth 突, koc 骨, kat 渴, pis 必.

Of course, these exceptions were also absorbed into r [l] later:

tor, kor, kar, phir.

This is a change from an obstruent to a liquid which is counter to the direction of close articulation.

(9) At the end of the 14th c., stop [b] (an allophone of /p/) changed into fricative [β] when it was preceded by y and r, and followed by vowels.

taybat \rightarrow tay β at 'bamboo field'

(10) In the middle of the 15th c., all β 's preceded by vowel, y, r, and z, and followed by vowels changed into glide w: fricative \rightarrow glide.

sy β ir \rightarrow swur \rightarrow swur 'capital city'
 $*k$ irbar \rightarrow kwirbar \rightarrow kwirwar \rightarrow kwirwer 'sentences'
 $*k$ oba \rightarrow kowa \rightarrow kwa 'be pretty and'
 $*\text{\text{a}ry\text{e}\text{b}\text{e}}$ \rightarrow $\text{a}\text{r}\text{y}\text{e}\text{b}\text{e}$ \rightarrow $\text{a}\text{r}\text{y}\text{w}\text{e}$ 'be difficult and'
 $*t$ obom \rightarrow towom \rightarrow towom \rightarrow toom 'helping'

(11) By the 15th c., there was a historical change of $*k$ (\rightarrow [g] \rightarrow [ɣ]) h in the environment between y, r, or z, and vowels (cf. K.-M. Lee 1972b): stop \rightarrow fricative.

$*[mulgai]$ \rightarrow [molhay] 'sand'

This change was also productive as a synchronic rule in MK.

ar + ko \rightarrow ar + ho 'know and'

Since the late sixteenth century, this change has been reversed by an analogy, that is, the exceptional ending -ho for r-final stems analogized to normal form -ko.

The change k \rightarrow h can also be counted as a case in favor of the principle of peripheral articulation, since it is a change from velar to glottal.

(12) In the middle of the 13th c., syllable-final affricate c had not neutralized to fricative s. However, by the middle of the 15th c.,

all syllable-final c, s, as well as ch, had neutralized into unreleased s owing to the unreleasing of syllable final consonants (cf. K.-M. Lee 1972b:80). This change (palatal + dental) can be involved in section 6, too. See also (17).

koc → [kos°] 'flower'

A change from s to t (cf. (5) in §3) followed soon after this change so at last a sequence of changes c → s → t was completed.

(13) A sequence of [l] and [h] (which did not come from k, cf. (11)) changed into [ll] in the verbal conjugation of the late 16th century's text Sohak onhae 小學諺解: fricative → liquid.

[ol] + [ha] → [olla] 'mount and'

This change has been productive with the nouns as well since the 17th c. One can also include this change (glottal → dental) in section 6.

[nolhay] → [nollay] 'song'

[molhay] → [mollay] 'sand'

In the 17th c., lh also began to change into r. So there was a period in which both [ll] and [r] coexisted, but by the 18th c., r had completely replaced ll. See a similar case in (15).

(14) At the turn of 18th c., a well-known palatalization process took place in Seoul dialect: the alveolar stop t or th became a palatal affricate c or ch before i or y.

tisay → cisay 'tile'

In the Southern dialects, this apparently happened before the 17th c. It is likely that the other palatalization processes $\begin{bmatrix} s \\ n \end{bmatrix} \rightarrow \begin{bmatrix} j \\ \rho \end{bmatrix} / \begin{bmatrix} i \\ y \end{bmatrix}$

also took place around this time in all but the Northwestern dialect. See also (30).

Kim (1973b) takes alveolar palatalization as a part of the sixth item of evidence supporting for his principle of centrifugal articulation (cf. section 5).

(15) From the 17th c. and, more apparently, in the 18th c., it became a general rule that intervocalic [l], which originated from reducing h out of the sequence [lh] (cf. (13), (35)), changed into [r] against the tendency of unreleasing.

nolhay → nolay → noray 'sing'

It is likely that $l \rightarrow r / V_V$ could be a general type of change in intervocalic position, though its direction is opposite to that of close articulation, and in complementary environments $r \rightarrow l / __ \begin{Bmatrix} \# \\ c \end{Bmatrix}$

(as mentioned in §2.1) is general.

(16) Contrary to the Kim's argument (1972b), in the Present-day Korean final consonant clusters rs and rth (and even rp, rph, and rk in some idiolects) before consonant-initial suffix tend to be simply r [l]. Cf. §2.3.

kors → kor + kwa [kolgwa] 'direction and'
harth- → har + ko [halk'o] 'lick and'

This is a counter-evidence to the close articulation principle since liquids tend to suppress others with closer apertures. In addition to this, the fact that some speakers reduce rp, rph, and rk to r [l] as a free variant of the stop articulation is counter-evidence to the notion of a conspiracy toward non-coronal articulation as well as the close articulation principle.

(17) As a new trend in Present-day Korean, final consonants c, ch, and th have a tendency toward free variation with s when a vowel-initial suffix is added.

kkoch + ir → [k'osɨl] 'flower'(acc.)
cēc + ir → [cəsɨl] 'milk'(acc.)
path + ir → [pasɨl] 'field'(acc.)

As mentioned in (12), changes from c or ch to s can be involved in §6.

(13') As an addition to this section, one may list a change of yə → ya which occurred in the 16th and 17th centuries.

-kwatyə → -kwatya → -kwacya:optative converb
-cyə → -cya:imperative finite verbal ending of plural first person
-nyə → -nya:prefinal ending 'ni' + interrogative ending
-ryə → -rya:prefinal ending 'ri' + interrogative ending
-rssyə → -rssya:exclamatory ending

These verbal endings lowered their stem vowel. 'Lowered', here, assumes that the vowel-shift already occurred in the 14th c. and that e is a mid vowel while a is a low vowel. Nevertheless, this change was not counted in the total of this section, since this does not affect every e after y but applies only to several particular verbal endings.

As shown in (9), (11), and (17), a change from stops to fricatives also occurs in contrast to section 3. Note that Dressler (1974) argues that it is a general case in diachronic change. The evidence in Korean, however, does not support Dressler's generalization, since counter-examples in section 3 outnumber the above three cases.

8. As for pros to peripheral (or centrifugal) articulation, there are quite a few seemingly relevant rules.

(18) Korean, like many other Altaic languages, avoids initial r before i or y. It also changes to n initially in all other environments.

(19) There is a possibility that syllable-final k in classical Chinese was weakened to y (or to h, via y) when Sino-Korean sounds were established in Late Old Korean. If the change y → h happened after the formulation of Sino-Korean sounds, it can be considered a case of the centrifugal tendency.

*ca_y (𐑦) → ca_h (→ ca)
 *ce_y (𐑦) → ce_h (→ ce)
 *su_y (𐑦) → so_h (→ sok)

(20) Sometime in Early MK, some intervocalic liquids disappeared.

*marin → nayn 'stream'
 *nuri → nuy 'the world'
 *murin → moyn 'mountain'

(21) In late MK, some word-final r's were dropped.

*hotor → harar → hara 'one day'
 *hoyer → oye 'chopsticks'
 *hyer → hye 'tongue'

More examples can be drawn from a sort of dissimilation process which started before the 15th c. and still continues.

parar → par 'sea'
 keurur → keurn → keur 'mirror'
 kyerir → kyari 'time, chance'
 karar → kar 'leg'
 urir → uri → ur- 'weep'

(22) In Early MK, r was kept before coronal consonants n, t, z, s, ç, and ch in the compound word-formation, but from around the 15th c., this r began to drop: liquid → l.

*kyezirsari → kyezisari 'mistletoe'
 *nersam → nezan 'a kind of milkvetch'

(23) From the 15th c., low (back) unrounded vowel a between dental and labial or between labial and dental consonants had changed into the mid rounded vowel o.

15 c. hapaza → hwoza 'alcove'
 16 c. marsam → marsom 'words'
 17 c. semay → somay 'sleeve'

In addition, the change from ʌ to o has also occurred before -(r)o since the 15th c. as a kind of regressive assimilation.

-aro → -oro:instrumental case
 -tarok → -torok:projective converbun
 cozarʌβi → cozaroi → cozoroi 'importantly'

This change from ʌ to o may also be considered as a case of close articulation (from low to mid vowel, assuming the vowel shift occurred in the 14th c.), but I prefer to mention it here as evidence for peripheral articulation, since it is above all an obvious assimilation process to the neighboring labial consonants or rounded vowels rather than an unconditional change from ʌ to o.

(24) In the 16th c. at the latest, the epenthetic consonant ŋ was inserted between vowels to avoid a hiatus (cf. S.-N. Lee 1955, Kim 1973b).

syo-aci → syoŋaci 'calf', etc.

Note that there was an opposite case as in (37) in the same period.

(25) From the late 15th c. to the middle of the 16th c., the coronal consonant z disappeared at first before i and y, then in all environment later.

sʌzi → sʌi 'between', etc.

In addition, at the turn of the 16th c., intervocalic ʒ lost ʒ, consequently causing intervocalic z to disappear later.

kəʒhuy → kəzuy → kəuy 'intestinal worm'

(26) Though it is a peculiar rule, some z's did not disappear but changed to c's in the environment of m__V or, more rarely, n__V, in the 16th or 17th c.

15 c. *namzin → namcin 'man'
 *самzir → самcir 'March the third'
 16- (momso →) momzo → momco 'in person'
 17 c. (sonso →) sonzo → sonco 'in person'

It is a favorable argument for Kim's peripheral articulation principle since dental z changes into palatal c as mentioned in §2.2, and also for his close articulation principle since fricative z changes into affricate c.

(27) In the 17th c., a coronal sound r was dropped before a non-coronal sound ph, the labial ph remaining alone.

arph → aph 'front'
 korpha- → kophi- 'be hungry'

In the above, rules (18), (20), (21), (22), and (27) all concerned y-deletion. Thus, we may say that there were quite a few ways to delete y-liquids. These deletions, however, together with (25) z-deletion, (31) g-deletion, and (32) g-deletion constitute only passive support for the principle of peripheral articulation. It is more desirable to have cases like (24) g-insertion as instances of active, positive support.

(28) From the 18th c. and by the end of the 17th c., vowel i between labial and dental consonants changed into rounded vowel u.

pär → pur 'fire'

Vowel i after dental and before labial also changed into u.

etip- → etup- 'be dark'

This is a mirror image rule changing a central vowel to a back vowel. In the other hand, like (23) mentioned above, this is another assimilation to a neighboring labial consonant. But also note that there is an opposite case (40) in the same period.

(29) From the late 17th c., [tɛ] and [dɛ] were palatalized to [tʲ] and [dʲ], respectively, before i or y (later before all front vowels and now before all vowels in Seoul).

oya [tɛja] → [tʲja]

ca [dɛa] → [dʲja]

This change must precede change (14). In other words, the former is the first step of palatalization and the latter the second step. These alveolar palatalization processes (including (14)) may be considered examples supporting examples the peripheral articulation principle of Kim (1973b).

There he argues that (a) the direction from alveolar to palatal (t → c) alone can support his principle, and (b) this direction (t → c) is significant compared with the other direction, from velar to palatal (k → c) which occurs in some dialects, and (c) alveolar palatalization (t → c) sometimes proceeds to depalatalization (c → k) which is an example of the centrifugal tendency, as in (30). Since a boundary of centrifugality is located on the apico-alveolar region, (a) the alveolar palatalization as well as (c) the depalatalization process will match his principle of peripheral articulation.

(30) In the 16th c., there was not only alveolar palatalization (cf. (14) in §-) but also depalatalization. That is, palatalized sounds changed further into velars: c → k / $\frac{[c]}{[k]}$. This change may also be considered as a close articulation from affricate to stop.

tisay → cisay/ciwa → kiwa 'tile'

masci- → masci- → maski- → maki- 'entrust to'

timchay → cimchay → kimchay 'pickled cabbage'

Note also there is dialectal change (41), i. e. k → c, which is exactly the opposite of this.

(31) After the appearance of alveolar palatalization, a related change, i. e. initial n-deletion before i or y, occurred in the second half of the 18th c.

nimkɨm → imkɨm 'king'

(32) I am not sure whether I may include the following case as an argument for the centrifugality or not, since it is a case of palatal deletion rather than dental deletion (like 18, 20, 21, 22, 25, 27, and 31). If Kim's principle includes palatals in the non-peripheral (central) area, since palatals are also [+ coronal] like dentals, then the following change can be added here.

In the 19th c., palatal y dropped after spirant s, c, ch.

syəm → səm 'island'

syo → so 'cow'

By the same token, ye frequently becomes e in the Present-day Korean.

kyesita → kesita 'be' (honorific)

hyesəŋ → hesəŋ 'comet'

However, in the 16th c. there exists a change (38) in the opposite direction.

At this moment, it is worth mentioning that coronal sounds are major targets of consonant deletion rules in the phonological history of Korean. More than two-thirds of them are deletions of r, z, n, and y and only three rules, for ŋ, h, and ɦ, do not have to do with the deletion of coronal consonants. Though deletion is quite passive and negative evidence, it is very significant for supporting Kim's proposal.

6. There are also several rules which go against the notion of a centrifugal articulation conspiracy.

(33) In Old Korean, some nominal stems have been reconstructed as having final ɿ's. These non-coronal velar sounds came to be dropped before a consonant or word-boundary in MK.

*namɔɿ → namo 'tree' ([namg] before vowel-initial suffix)

*nurɔɿ → norʌ 'deer' ([norɦ] before vowel-initial suffix)

(34) In the 15th c., intervocalic β changed into w in general as in (10). However, β before i behaved a little differently. In a few cases, (a) βi → wi especially when preceded by vowel -i-, but in most cases, (b) βi → i. The latter is a case of labial (non-coronal) deletion.

- (a) $\text{chi}\beta\text{i} \rightarrow \text{chiwi}$ 'cold weather'
 (b) $\text{sugi} \rightarrow \text{sui}$ 'easily'
 $\text{sagi} \rightarrow \text{sai}$ 'shrimp'

(35) At the turn of the 16th c., the voiced glottal fricative ɦ between z and vowel began to disappear.

$\text{k}\Lambda\text{z}\text{ɦay} \rightarrow \text{k}\Lambda\text{zay}$ 'scissors'

As in (15), from the 17th c., the sequence $[\text{l}\text{ɦ}]$ between vowels became $[\text{l}]$ and then $[\text{r}]$. In other words, $[\text{ɦ}]$ between $[\text{l}]$ and vowel disappeared.

(36) From the 15th c. to the end of the 16th c., there arose a tendency to delete intervocalic ɦ , with this rule still being operative in Korean today.

$\text{maktahi} \rightarrow \text{maktay}$ 'stick'
 $\text{cikcahi} \rightarrow \text{cikcay}$ 'immediately'
 $\text{kahi} \rightarrow \text{kay}$ 'dog'

(37) In the 16th c., intervocalic ŋ dropped.

$\text{in}\text{ək}\text{i}\text{y} \rightarrow \text{y}\text{ək}\text{i}$ 'here'

$-\text{nigita} \rightarrow -\text{nita}$: self-effacing prefinal suffix + finite verb in indicative form

Many examples of dissimilation are caused by this rule especially when y follows.

$\text{conyoŋ} \rightarrow \text{coyoŋ}$ 'calm'
 $\text{py\text{ö}ny\text{a}ŋ} \rightarrow \text{py\text{ö}y\text{a}ŋ} (\rightarrow \text{piy\text{a}ŋ})$ 'Py\text{ö}ngyang' (a city in North Korea)

It is a case opposite to (24) as well as to Kim's argument.

(38) In the 16th c., epenthesis of y in intervocalic position was also popular. Cf. the opposite case (32).

$\text{h}\Lambda + \text{a} \rightarrow \text{haya}$ 'do and so'
 $\text{y\text{ö}hiy} + \text{ə} \rightarrow \text{y\text{ö}hiyy\text{ə}}$ 'be bereaved of and so'

(39) In the 17th c., p of pth clusters dropped (through this change appears in the texts a century later).

$\text{pthuy-} \rightarrow \text{thuy-}$ 'jump'
 $\text{pthi-} \rightarrow \text{thi-}$ 'slit it open'
 $\text{pth}\Lambda- \rightarrow \text{th}\Lambda-$ 'play (harp)'
 $\text{pthuk} \rightarrow \text{thuk}$ 'popping-out motion'

(40) Contrary to (28) $\text{i} \rightarrow \text{u}$, the reverse $\text{u} \rightarrow \text{i}$ also happened between labial stops (m , p , ph) and y in the 17th c. u is easily fronted

to i by the influence of the following y, because the opposition between i and u after labials is neutralized by rule (28).

muy- → m*ɨ*y- (→ mi?) 'move' (A monophthongized form in the parenthesis is not attested.)

pay- → p*ɨ*y- (→ pi) 'cut'

phuy- → ph*ɨ*y- (→ phi) 'bloom'

This is most likely a case of hypercorrection. See also (45) for monophthongized forms.

(41) Probably before the 18th c., the southern dialects experienced another palatalization process: velar stop k or kh in the first syllable of words becomes c or ch before i or y. Cf. (14) in §4, also an case opposite to that of (30).

khi → chi 'winnow'

Kim (1973b:278) had already noticed this non-standard dialectal pronunciation, but he tried to ignore it as an isolated phenomenon. Cf. Cook's comment (1973:289). This change (affricate → stop) can be included in §4, too.

(42) After the middle of the 18th c., so-called h-final nouns began to lose their h's. It seems that this change is a sort of expansion of rule (36), but the environment is not the same, since in (42) consonants such as r, m, n may precede h.

kirh → kir 'road'

nacoh → naco 'evening'

anh → an 'inside'

amh → am 'female'

Among these h-final nouns, there were some words which originated from classical Chinese k-final sounds.

cah (𪛗) → ca cf. the Sino-Korean pronunciation: chək

cəh (𪛗) → cə cf. the Sino-Korean pronunciation: cək

(43) In the late 18th c., a little before Hanchōngmungam 漢清文鑑 (1774), syllable-initial back vowel ʌ had already changed into non-back vowel a as the second step in its disappearance. See (4) for its first step.

pthʌ- → tha- 'ride'

kʌray → karɛ 'a wild walnut'

(44) Following the complete loss of ʌ as in (43), the vowel system continued to change. Therefore, the end of the 18th c. witnessed the monophthongization of diphthongs: (ʌy →) ay → ɛ, əy → e. It is evident because the umlaut phenomenon, which presuppose monophthongization, happened at the turn of the 19th c. A rough formulation of the umlaut

rule, that is, i-vowel regressive assimilation, is as follows.

$$\begin{bmatrix} a \\ \text{ə} \end{bmatrix} \rightarrow \begin{bmatrix} \text{ɛ} \\ \text{e} \end{bmatrix} / \text{---} \begin{cases} p, ph, m \\ k, \eta, kk \\ r \end{cases} i$$

ciphaŋi → ciphɛŋi 'stick'

məki- → meki- 'feed'

sakki → sɛkki 'cub'

akki- → ɛkki- 'spare'

The following are historical examples in which umlaut is possible across the r sound. Cf. Cook (1973:289).

tari- (→ tari-) → tɛri- 'boil down'

kitari- → kitɛri- 'wait'

The above monophthongization and umlaut are a sort of velar palatalization; in other words, fronting of velar vowels to palatal ones against Kim's peripheral articulation conspiracy.

(45) In the 19th c., i was fronted (=palatalized) to i before s, c, and ch.

(cɪs →) cɪt → cit 'gesture'

(sikaor →) sikaor → sikor 'countryside'

A similar monophthongization iy → i also occurred in the 19th c. Cf. (40).

sɪykor → sikor 'countryside' (an allomorph to the above form)

yeki → yei 'here'

mɪyp- → mɪp- 'hate'

(46) In modern dialects, there is an alveolarization process, with h becoming s before i or y.

hyŋ → sŋ 'elder brother'

him → sim [jim] 'power'

hyŋ → sŋ 'defect'

As shown in (14), (29), (30), (31), (41), (44), (45), and (46), palatalization in a broad sense has prevailed in Korean phonology. Among those, (14), (41), (44), (45) & (46) go against Kim's proposal and only (29) and (31) support it. (30) is not purely a palatalization process, i. e. its focus is on depalatalization.

Lastly, here is an interesting case where epentheses of consonants once opposed the principle of centrifugality (kacho- → kancho-) and then turned out to favor it (kancho- → kamcho-) in the same example in the 19th c.

kacho- → kancho- → kamcho- 'hide'

cf. tɛti- → tɛci- → tɛnci- 'throw'

kichə → kinchə 'stop and'

7. The careful reader has probably noticed that the rules in §§3 and 4 is just involve a change of sounds from one to the other except (16) which is a unique deletion. This is almost the opposite in §§5 and 6, as only 12 out of 29 arguments from (18) to (46) are sound-changing types. The rest are deletions (15 rules) or additions (2 rules).

As I mentioned before, the deletion rules are rather passive and negative arguments compared to the changing or addition types, since the latter indicates a positive direction of changes as concrete evidence. I do not know exactly why this kind of result has occurred. Notice that Kim's original arguments already predict this result to some extent. There are four (1-4) changing type rules among his five in favor of close articulation and only three (1, 2, 6) out of six (Kim 1973b) for peripheral articulation. Cf. section 2.

Another tendency that we can observe is that most rules are related to consonants. For instance, rules concerning vowels from each group are as follows: one each for §3 and §4, two for §5 and four for §6. A total of eight out of 47. This maldistribution is also anticipated in Kim's papers since he suggested one case of vowel change in Kim (1972a) and two cases in Kim (1972b), i. e. three in all. Furthermore, in the latter, he mentioned umlaut as counterevidence and he retracted a case of vowel shift, so no vowel rules remain in favor of the peripheral articulation principle. I am not sure whether this tendency in our data will invalidate our conclusion. I hope, however, that Kim's principle is equally valid for vowels.

Another interesting observation concerning phonological rules in Korean and Kim's principles is that there is not a single rule of vowel addition or deletion which is relevant to his principles. Of course, this result is caused by the rarity of vowel addition and deletion rules in Korean. (This fact has not been clearly pointed out, but the number of apocope, syncope, and vowel epenthesis rules are rather limited in the phonological history of Korean.) This is also one reason why Kisseberth's case of functional analysis (1970) fails to apply directly for Korean, since he mostly works on the addition and deletion of vowels, though the morpheme structure constraints of both Yawelmani and Korean are the same, i. e. no instance of #CC, CC#, or CCC. Notice that what Kim (1972a:166) says is misleading: "In Korean, there is no such well-defined surface constraint [as Yawelmani], but an overriding principle." I think, however, that the Korean case is different from Yawelmani not because of a lack of constraints but because of a lack of vowel rules such as mentioned above.

In addition, assuming that one admits Kim's principles, it is not likely to be able to foresee the possibility that these two principles may alternate in the history of Korean phonology. In other words, there is neither such a case that the principle of close articulation is more dominant than the principle of peripheral articulation in a certain period nor a reversed case. As we saw in the above, evidence is scattered all through the stream of time. Thus, one may claim that these tendencies are diachronic as well as synchronic.

Lastly, I hope I did not perpetrate a sort of taxonomic fallacy by classifying the data as above. As I mentioned earlier, in order to evaluate Kim's proposals, we have to ask the question whether or not these principles cover most of the important and frequent major rules in Korean. Therefore, I have tried to include most of them as many as possible in this paper to review under these principles.

According to Kim (1972a:167), "This metacondition [sitting on top of the phonological component of Korean] would monitor all the phonological rules, all rules that meet this condition would be grouped as functionally equivalent rules." However, if there are many rules which are unable to meet these principles, then does it not mean that the principles are less influential?

It seems to me that Kim is very confident of his principles, since he recognizes only one counterexample to the principle of close articulation in the footnote of Kim (1972a:167): $t \rightarrow s / _s$ e.g. tat-so \rightarrow [tasso] 'to close'. There are, however, many other exceptional cases which constitute 'leaks' in the conspiracy as demonstrated above. The total number of 29 counterexamples (cf. section 1) is too great to be swept under a carpet of "a higher-order universal convention overruling the Korean-specific output condition" (Kim loc. cit.).

In conclusion, while the rules studied neither support nor refute Kim's theory, one would expect that, if the principles were indeed valid, there would be a much larger proportion of rules favoring them. No conclusions, however, can be drawn until a much more methodologically advanced study is made.

NOTE

*This paper was presented at the 1977 Linguistic Institute of the LSA, Symposium on Korean Linguistics, at the University of Hawaii on August 20. I am grateful to Chin-W. Kim, Alan H. Kim, Thomas H. Robb, and Leon A. Serafim for comments and corrections. This work was prepared while I was in Cambridge on the Harvard-Yenching Institute Research Fellowship.

APPENDIX

Summary of rules

§3. Rules in favor of the principle of close articulation

- | | |
|--|--|
| (1) 15 c. $\beta \rightarrow p / _C$ | (3) 15 d. $h \rightarrow t / _+ n$
(This rule can also be involved in §6.) |
| (2) 15 c. $\beta \rightarrow p / \begin{Bmatrix} h \\ k \\ t \end{Bmatrix} _$ | (4) 15 c. $\wedge \rightarrow \ddot{z} / \#(C)V(C) _$ |

(5) 16 c. $s \rightarrow t / __ \left\{ \begin{smallmatrix} C \\ \# \end{smallmatrix} \right\}$ (6) 17 c. $x \rightarrow kh / \# __$

4. Rules against the principle of close articulation

(7) Old K. $t \rightarrow r / V __ V$ (13) 16 c. $h \rightarrow l / l __$
(cf. 15; also §6)(8) 12 c. $t \rightarrow r / __ \#$ (14) 17 c. $\left[\begin{smallmatrix} t \\ th \end{smallmatrix} \right] \rightarrow \left[\begin{smallmatrix} c \\ ch \end{smallmatrix} \right] / __ \left\{ \begin{smallmatrix} i \\ y \end{smallmatrix} \right\}$
(cf. 30, 41; also §5)(10) 15 c. $\beta \rightarrow w / \left\{ \begin{smallmatrix} V \\ y \\ r \\ z \end{smallmatrix} \right\} __ V$ (15) 18 c. $l \rightarrow r / V __ V$
(cf. 13, 35)(11) 15 c. $k \rightarrow h / \left\{ \begin{smallmatrix} y \\ r \\ z \end{smallmatrix} \right\} __ V$ (16) Pres. K. $C \rightarrow \emptyset / r __ \left\{ \begin{smallmatrix} C \\ \# \end{smallmatrix} \right\}$

(also §5)

(17) Pres. K. $\left\{ \begin{smallmatrix} c \\ ch \\ th \end{smallmatrix} \right\} \rightarrow s / __ \#$
(cf. 12)(12) 15 c. $c \rightarrow s / __ \#$
(cf. 17; also §6)

5. Rules favoring the principle of peripheral articulation

(18) Old K. $r \rightarrow \emptyset / \# __ \left\{ \begin{smallmatrix} i \\ y \end{smallmatrix} \right\}$ (27) 17 c. $r \rightarrow \emptyset / __ ph$ (19) Old K. $*r \rightarrow h / __ \#$ (28) 17 c. $i \rightarrow u / \left[\begin{smallmatrix} C \\ +cor \\ +ant \end{smallmatrix} \right] __ \left[\begin{smallmatrix} C \\ -cor \\ +ant \end{smallmatrix} \right]$ (20) Mid K. $r \rightarrow \emptyset / V __ V$

(opp. 40)

(21) Mid. K. $r \rightarrow \emptyset / __ \#$ (22) 15 c. $r \rightarrow \emptyset / __ \left[\begin{smallmatrix} C \\ +coronal \end{smallmatrix} \right]$ (29) 17 c. $\left[\begin{smallmatrix} ts \\ dz \end{smallmatrix} \right] \rightarrow \left[\begin{smallmatrix} t \\ d \end{smallmatrix} \right] / __ \left\{ \begin{smallmatrix} i \\ y \end{smallmatrix} \right\}$ (23) 15 c. $\Lambda \rightarrow o / \left[\begin{smallmatrix} C \\ +cor \\ +ant \end{smallmatrix} \right] __ \left[\begin{smallmatrix} C \\ -cor \\ +ant \end{smallmatrix} \right]$ (30) 18 c. $c \rightarrow k / __ \left\{ \begin{smallmatrix} i \\ y \end{smallmatrix} \right\}$
(cf. 14, opp. 41; also §3)// : mirror image
(also §3)(31) 18 c. $n \rightarrow \emptyset / \# __ \left\{ \begin{smallmatrix} i \\ y \end{smallmatrix} \right\}$ (24) 16 c. $\emptyset \rightarrow u / V __ V$
(opposite to 37)(32) 19 c. $y \rightarrow \emptyset / \left\{ \begin{smallmatrix} s \\ c \\ ch \end{smallmatrix} \right\} __ e$ (25) 16 c. $z \rightarrow \emptyset / \left\{ \begin{smallmatrix} i \\ y \end{smallmatrix} \right\} __ V$

(opp. 38)

(26) 16 c. $z \rightarrow c / \left\{ \begin{smallmatrix} m \\ n \end{smallmatrix} \right\} __ V$
(also §3)

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A BRIEF NOTE ON THE RECONSTRUCTION OF MÁ? IN TIBETO-BURMAN¹

F. K. Lehman

I argue, in this paper, on the basis of internal reconstruction within Lushai and Haka Chin, that the formative, ma?, which has hitherto been thought to be reconstructible as a proto-Tibeto-Burman third person pronominal element, is in fact a logical quantifier. As a suffix, it marks a noun phrase for a sort of focal contrast; its most general gloss is 'even.' I go on to demonstrate that there is no genuine third person pronoun, lexically, in these languages and I show that this has to do with the distinction between the non-anaphoric, but still indexical character of first and second, i.e., 'speech act' pronouns and the wholly anaphorical character of third person pronouns. I also argue that the reason good comparative historical linguistic work has to be based upon a fairly deep knowledge of the languages dealt with has to do with the critical role played in such work by internal reconstruction.

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More than once during the last couple of years or so I have heard Paul Benedict make the claim, not in print, I think, but in discussions of papers at Sino-Tibetan Conferences, that one should reconstruct for T-B a third person pronominal element something like ma, or, perhaps, ma'. I am especially aware of his making that claim in the course of discussion of the paper by J. Bauman that dealt, inter alia, with the T-B pronominal system, at the 6th Conference, and at that time I argued that, on the contrary, this element, ma/ma', has to be taken as a logical quantifier of a kind most similar to such English words as 'even' and 'only' or 'just' and 'very' (as in the expression 'the very one'). At that time and at least once in a subsequent S-T Conference Benedict rejected this suggestion on the basis, so it would appear, of his admittedly wide knowledge of the glosses of the lexicons of T-B languages. I, on the other hand was arguing from my reasonably good knowledge simply of a few Kuki-Chin languages, principally Haka Chin (Lai) and Lushai (Mizo). It is, I think, time to set my argument down in at least some detail, owing not only to the obvious scholarly requirement that we get our facts right in reconstructive work, even facts about single little words, but also to the fact that I have done considerable additional work on the two aforementioned Chin languages over the last couple of years with a highly skilled teacher and can now document my case from Lushai much more neatly than I might have been able to do previously. Moreover, the T-B pronominal system, as such papers as Bauman's clearly demonstrate, is worth unravelling in all its intriguing complexity. In particular, there is an obvious sense in which the system is defective, since for at least Kuki-Chin, whilst roots exist that have first and second persons, respectively, as their meanings (kei, nang), it is not at all clear that there is any such root for the third person. True, there exists the ubiquitous T-B third-person a-, which in Kuki-Chin serves as a clitic subject on verbs (though in some Chin languages third person singular lacks a clitic subject)², a third person possessive prefix (also clitic in the way it takes a tone complementary to the following base) and (Lehman 1975a) a generalised marker of singular referentiality for common nouns, something like 'the one that is a (member of such and such a class or set)'. But this element, a-, which may be said to function almost as a demonstrative element owing to its almost purely referential function, and which, correspondingly, crops up in many Kuki-Chin languages as the 'wh' marker of relative clauses (see Lehman 1975a and b for examples)

lōkcīja² kxang- 'a person who comes/lit. coming-one person'
(Southern Chin)

thīia ūi 'a dog that has died/lit. dead-one dog' (Lushai),

is parallel not to the aforesaid first and second person independent bases or non-clitic, full personal pronouns, but rather to the first and second person clitics (ka-, na/i-). One of the consequences of this state of affairs is a frequently defective paradigm for personal pronouns, where, beside kei and nang, say, one finds, for the third person in non-clitic positions, the a- clitic followed by some other word, such as nī (Southern Chin -- the word is a reconstructible T-B item with the sense of human individual or group -- not found in Benedict's Conspectus, but compare Lushai, where it functions

this way, as in Southern Chin, with the plural affix of Kachin, -ni)

kēi, nang, a-nī 'I, thou, he' (Southern Chin)
 kéi, náng, ānī 'I, thou, he' (Lushai, but see below)

or ma? -- the word being examined in the present paper. Thus, in particular, Haka Chin has, for the third person singular 'full' pronoun only ama beside kei(ma) and nang (ma).

Under the circumstances, it is not at all astonishing, that it should have come to appear that this little word carries, here, the basic meaning of some kind of, let us say, non-specific pronominal-reference (something like the non-specific, indefinite 'one' of English, 'on' of French, 'man' of German). Indeed, consider the foregoing examples from Haka Chin. All three persons end in -ma; in fact, save for the most obscure and poetical usages, it is rather obligatory than optional in all three persons. In the Haka language, then, it might be said -- somewhat misleadingly, however, as I shall show -- that -ma fails in any obvious way to qualify the simple meaning of the respective personal pronouns. When, then, one finds in the materials generally employed by comparatists, i.e., bilingual word-lists and dictionaries and, somewhat secondarily, often quite superficial sketch-grammars, that, as in both the Lushai materials and the Haka Chin materials, the pronouns ending in ma? -- for Lushai has also

kéima?-, nángma?-, āma?-

whose exact treatment I shall give later on in this paper -- are glossed as either bare personal pronouns or, as in Lushai (cf. Lorrain 1940) as either simple personal pronouns or as, e.g.,

'kei-mah-in, 'I, I myself' (the -in is the nominative suffix before a transitive verb' (Lorrain 1940),

one is, perhaps, to be excused for supposing that, basically, ma(?) has a sort of pronominal force.

I might, of course, somewhat qualify this excusability by noting that this same Lushai dictionary -- Benedict does not seem to have used it -- lists the separate entry

'mah, adv. 1. even, rather...'.
 .

However, given the way ma? is treated under pronominal entries, one might well be led to assume mere homophony between the two sets of entries. As I shall demonstrate, however, one would be wrong to do so.

Now, the demonstration I shall make has a sort of theoretical or methodological point to it. In historical-comparative work in linguistics we know there are two sorts of reconstructive methods available, to wit, comparative reconstruction, which is the method almost exclusively pursued by Benedict, in his *Conspectus*, and so-called internal reconstruction. There

seems to be some unclarity, however, about how these two methods relate to each other in a practical strategy of work. It seems to me that, in many respects, reliable use of comparative reconstruction often has to depend upon what are essentially internal reconstructive methods. But what I tend to mean by internal reconstruction has to be stated carefully.

Suppose I ask myself whether Chin-Lushai ma', in its respective pronominal and quantificational ('even' etc.) uses, is one and the same item in some obvious sense. What do I want to do? I want to look closely at the grammars of these languages to see exactly how pronominal words involving ma' are used, what, if anything, ma' really 'means' when so employed. If I can show that this comes to the same thing as the meaning of quantifier ma', then I can argue plausibly that at least the former is derived from the latter. But the matter is not quite as clear-cut as I have just made it seem. If I had only Haka Chin to deal with I could do very little and I certainly could not make the point I have referred to. I have to work, at first, only with Lushai alone, proving, so to speak that in at least that one language the underlying meaning of 'pronominal' ma' is the meaning of quantifier ma' and, moreover, strictly speaking, that underlyingly, in the sense of grammatical theory, pronominal ma' is that quantifier. Otherwise, the counter-argument might reasonably be put forward, that the 'historical' derivation in question could just as well have gone the other way round, in the case of a strong similarity of meaning between two forms of fundamentally different grammatical status, with the quantifier having been developed as a semantical extension of the secondary meaning-in-use of the pronoun. (I shall, in the present brief note, in fact not make this last point other than obliquely, although I think the case will appear to have been made well enough that way; I shall have to reserve the demonstration that the ma' element in pronouns is a quantifier for projected future publications on the descriptive grammar of Lushai.) In any case, it is only through 'reconstructing' in Lushai the quantificational status of pronominal ma' that I will be able to argue, comparatively, that the pronominal ma' in Haka and other Chin languages must also be, or go back, historically, to a quantifier; for otherwise, I might have to fall back upon the hypothesis in the latter languages that, although the meaning of a personal pronoun with ma' is 'emphatic, contrastive and restrictive', this is only a specialised condition on the employment of a pronoun, a secondary meaning-in-use.

But, clearly, what I have tried to argue methodologically here comes to nothing more than arguing that there is the closest sort of connection between the internal reconstruction of historical linguistics and the deep grammatical analysis of contemporary descriptive linguistics, and that really adequate historical work, in so far as it must always appeal in part to the method of internal reconstruction, must always depend upon fairly deep understanding of the grammars of the languages concerned. The point is, in itself, neither new nor profound, but since historical linguistics has long recognised the relevance and importance to itself of internal reconstruction as an historical method, it is, perhaps, more forceful to be able to claim that the dependence of historical reconstruction upon sound descriptive grammatical understanding is not merely something self-servingly put forward by those linguists who have the advantage of studying the individual languages

in depth but is rather -- or at least 'as well' -- a dependence already, if only covertly, stated beforehand within the canons of method of historical linguistics as such. I think, furthermore, that the point I am making has to be made explicitly and driven home for Tibeto-Burman/Sino-Tibetan comparative-historical linguistics, just because, in at least my view (cf. Lehman 1975c), very little historical work in T-B/S-T has gone beyond working with grammatically superficial treatments of these languages and even the most comprehensive work, such as Benedict's generally admirable Conspectus has certainly not gone beyond this.

I can now make my case about ma?- by a quite sketchy treatment of certain facts of Lushai together with a few from Haka Chin. First, consider the personal pronoun in Lushai. The most neutral form shows absence, as said before, of the pronoun altogether, at least in the case of subjects and direct objects, where the features of person and number are shown by obligatory clitics attached to the verb.

ka-kāl	'I went'	kán kāl	'we went'
i-kāl	'thou went'	ín kāl	'you went'
a-kāl	'he (she, it) went'	án kāl	'they went'

(I shall not bother here to show object clitics, which are complicated to deal with and would add nothing to what I wish to show in this paper.)

The first and second persons can be expressed as full pronouns, from which, underlyingly, presumably, the clitic subjects are copied before pronominal deletion or its equivalent. The third person has a way of being expressed also independently of the clitic subject, but, as will be seen, somewhat distinctively. Thus, there are full and independent root words for the first two persons, singular, kéi and náng, respectively, but that is not the case for the third person. Since the neutral, e.g., not even 'focal' (see Lehman 1975c), use of the pronoun almost always leads to its deletion, at least for subjects and objects, minimally the full pronouns should appear followed by cūu, which for our present purposes can be understood as deictic-anaphoric element marking a noun-phrase as in focus and 'pointing', so to say, to its presupposed prior mention in the discourse (on the intersection, in this kind of situation, of 'focus' and 'topic' see again Lehman 1975c), and any markers of grammatical case. Since nothing serves to distinguish first from second person in what I shall have to say, I shall generally use first person examples only hereafter.

kéi cūu	ka-kāl	'í [for one, at all events, at least] went'
kéi cūa <u>an</u>	kāhm <u>u</u> -	'í [+ ergative case marker, - <u>in</u> contracted with <u>cūu</u>] saw (it).'
kéi <u>n</u> i	cūu kánkāl	'wé went' [<u>n</u> i, 'one(s)' marks plurality]

But there is really no exact equivalent to this minimally emphatic pronoun in the third person, which can only be expressed in a way paralleling a more contrastive-emphatic form of the first and second person pronouns.

kéi <u>ma</u> ?	'í [just I, alone, of all beings considered]
-----------------	--

kéima?-n̄i 'wé' [same contrastive sense only]
 āma?-(or) ān̄i 'hē' [and not others --n̄i is used singularly
 in the third person, though also plurally,
 in ānn̄i, 'just they'].

It is important to understand that, in Lushai, whenever ma?- appears directly in the pronoun this exclusive-emphatic contrastive meaning is conveyed. It never is used to mean anything as simple as bare personal reference. Moreover, concomitantly, cūu?, 'only' can freely follow pronouns with ma?- but can never follow kéi(cūu) or náng(cūu) directly. Thus

kéima?-(cāu?) ka-kāláng 'I shall go'

is typically a reply to a question as to which one (exclusively) of a set of persons is to go. Similarly for āma?-/ān̄i (cāu?).

If a personal pronoun with ma?- be followed again by cūu, the strongly disjunctive force of ma?- is weakened somewhat. Thus

kéima?-cūu 'I' [in particular, above all]
 āma?-(or) ān̄i cūu 'he' [in particular, above all].

It is, moreover, especially clear what is involved here when we see what pronominal forms may be followed by ēro?-, an 'expletive' meaning something like 'however' or 'on the other hand.' In the first and second persons ma?- may not be used and in all persons cūu must follow. Consider the well-known passage from the book of Matthew, where Jesus exclaims

kéiēro?-cūaan ... (Now) I [on the other hand] (say to you, etc.),

where it is clearly to be inferred that whilst what Jesus is about to say differs from what certain previous prophets have taught, no claim is being laid by Jesus to the unique possession of this message, or even, for the matter of that, the predominant possession of its truth, as the passage is rendered in Lushai. But I have said, above, that the third person exhibits no exact equivalent to the minimally contrastive (focal) first and second person pronouns. What is in fact of interest is the way the third person pronouns seem in part, at least, to fill part of that function with forms that ordinarily function in the way of the stronger, disjunctive contrast. Thus,

āma?-ēro?-cūu is the fixed expression for 'however',

where āma?- refers to any previously mentioned situation. Here is yet another asymmetry between the first two persons and the third person added to the otherwise general absence of a non-disjunctively contrastive third person pronoun, the use of n̄i in the singular for the third person only and, of course, the obvious fact that the part of these forms that seems to bear the third-person meaning as such, at least where the third person is specific and definite (he vs. 'one'), is the proclitic a- rather than a free-standing and independent base as in the case of the other two persons. I can at this time only speculate that this cluster of asymmetries may have something to

do with the fact that the first and second person are always definite-specific, and referentially unique, whereas the third person is not referentially unique -- 'he' can be ambiguous in any discourse -- and need not even be definite -- again, 'one' where it means, roughly, anyone. In effect, if this be relevant at all, one must always do something to make a third person pronoun definite apart from its meaning as third person and this amounts to contrasting the 'one' being referred to in a sharp way, whereas sharp contrast in the other two persons is redundant, on account of their semantically inherent definiteness, except where exclusivity is being asserted. But I do not at this time yet know how to formalise or make this suggestion precise enough even to test empirically. Notice, in any case, that what I have suggested might plausibly help to explain not only the asymmetry concerning ma?- but also the other two, because, on the one hand, ma?- can be replaced by nīi in the third singular, which, meaning, as it does, 'one who, one that...', does the same work of definitisation; on the other hand, one or other of these follows the clitic a- necessarily, in so far as that clitic is demonstrably indefinite. And that a- is in fact in itself indefinite will shortly be seen.

So far, then, I have been able to review the apparent evidence for ma?- being inherently pronominal and more or less to dispose of that view. But I must still take up any possible evidence for its being especially to be identified with the third person, before proceeding to its use in the meaning of 'even'.

The way of saying 'oneself' is ma?-nīi and this is sometimes used also for an explicit non-definite third person pronoun as in

ma?-nīin-a-hrīaaáng 'one is bound to know (it),'

where it is to be observed that the a- clitic still appears and where, most significantly, so it might seem, ma?- looks as though it were in the position of the head of the construction. This is perhaps even better seen in the following expression

mi-hrīng hmēelma-ber- ma?-nīi ānii-
mankind enemy -worst 'himself' he is
'man's his own worst enemy,'

where, in fact, nīi is, nominally at least, plural, yet both indefinite and unspecific, viz., 'the *i*th and/or *j*th person' and hence induces the singular subject clitic and is in identity with the (nominally) singular class-word subject, mi-hrīng, mankind.

Furthermore, since tūu means 'who' or 'whoever', and so also tu-ma?- in such expressions as

tu-ma?- an-lou-kāllou- 'nobody came,'

one can easily form the (false) impression that ma?- bears the pronominal force here whilst tu- ((tūu/)) functions as a wh-word, so to speak.

However, it is comparatively easy to show that this sort of impression has to be wrong. If ma?-, here, were, as indeed Lorrain's dictionary asserts, a sort of indefinite third person word, basically, something like 'self', one would have to expect that it could be followed by a post-demonstrative when not preceded by a demonstrative, this on analogy with the first two persons. Thus

kéi hīi 'I, here'

but never

*ma?-hīi (whatever it might be supposed to mean).

And whilst one might further assume that this is because ma?-, though a pronoun head, is indeed non-definite, contrary to the case of the first two persons, and that it must be therefore preceded by a demonstrative prefix, this, too, would be wrong. For what one gets is not

*hée ma?- hīi

but

hēi ma?- hīi, - 'this one, here, this very one, here'.

where hēi, like kéi is a deictic full pronoun (this one). In fact in these last two cases we have already come to the use of ma?- with the meaning of the quantifier 'even' or 'just' and it is to that consideration that I now turn my attention.

First, it is easy to see that the ma?- in the immediately preceding use is indeed a logical quantifier; it is replaceable by, e.g., pō?, 'too, also,'

hēi pō? hīi 'also this one, here; this one, here, too.'

Now, what about some examples of ma?- as 'even' and the like in cases where it cannot possibly be mistaken for a pronominal element, third person or otherwise? Consider just the following sampling:

(?)
 hēi ma?- hīi, ēi ro?- 'Eat this, too! Eat 'up to and including'
 pō? eat ! this!' ('even')
 hēi ma?- hīi ka-tāan ei-zo?- a-hārsāa āng
 pō? me-for eat finish it-difficult future
 'It would be hard for me to eat even this'
 (i.e., let alone what you've just asked me to eat).
 lou-kāl ma?- ro?- 'Just come!' (i.e., forget any hesitation)
 come even !
 èn ma?- ro?- 'Just see for yourself!' (don't take my word
 look ! for it)

In such contexts, ma²⁻ often, in fact, has the sort of 'negative polarity' that we expect of logical quantifiers in the nature of English 'even'.

hláu ma²⁻ ta-cêe 'There's nothing even to fear'
 fear imper. polite (N.B., in this case, the polite imperative allows this negative polarity, because it can be construed as positive or negative injunction, whilst, less politely, ro²⁻ is positive, su²⁻ negative imperative)

This instance of ma²⁻ might just as well be rendered into English as 'at all' ('there's nothing at all to fear') and such a use, clearly, is what we saw earlier on with tu-ma²⁻, 'nobody', (lit. 'whoever-at-all')[with negative polarity].

Thang-i a-lou zín lou-váng 'Thangi won't visit (us)',
 Thangi visit not will

Lian-ā nu-púinei²⁻ a²⁻ ma²⁻ lou-zín thei-lou-cūu
 Liana wedding to come-visit cannot!
 'Why she couldn't even come for Liana's wedding!'

tūna²⁻ma²⁻ mín za²⁻ lou²⁻ cūaan ... 'if he doesn't respect me even
 now to me respect not if, now ...'

and so on. Or, there is the expression ma²⁻-sēe, a contraction, certainly, of the longer, but perfectly standard ni-ma²⁻-selāa (to be-even let-be!), meaning 'but' in the sense of 'nevertheless' rather than in the sense of 'on the contrary' (āma²⁻-ēro²⁻-cūu).

Springfiēdā kal- kan-tūmāa, āma²⁻-ēro²⁻-cūu rua²⁻-āsuur-cūaan,
 " to go we try & however, rain it fall whereas,
 kán thul²⁻-áng we had to cancel

'We planned to go to Springfield, but, as it rained we had to cancel the trip.'

as against

Fōrda- cūu mīn- án sóisēel nāsa-hlēeā,
 Ford People-erg. they criticise much
 ma²⁻-sēe/ ni-ma²⁻-sēlāa Pre-sīdēt ni²⁻ zēel tūmīn ābei- nāsā hlee-
 however, president be continue try-ing hope much
 'People criticise Ford a lot,
 yet he hopes strongly to try to keep being President.'

Here, clearly, the force of ma²⁻ is 'even so' or 'despite that'. But there is no need for me to multiply cases any further.

Consider, now, so-called reduplicated ma²⁻-

nāngma²⁻-ma²⁻ án soom-du²⁻ cēcūaan kāl ngei- ro²⁻
 thou they invite want you if, go-certain!
 (clitic)

'If they want to invite even you (of all people), make sure to go!'

āma?ma?-:...ro?-sè

'If they want to invite even him (no less), let him be sure to go!'

ānli ma?- ā fèl cūaan ēng-a?-ngèe pās tuur-īn mīn bēisei-
even he he fail if how pass for to me hope

'If even he fails, how can I hope to pass?'

This is actually not a reduplication of ma?- but rather two successive uses in slightly differing senses, the first in the scope of the second, just as pronoun+ma?- can be in the logical scope of a following cūu (above). The second ma?- in these examples means almost exactly what English 'even' means in the translations and qualifies the meaning ('very', 'just') of the first. We shall see shortly that the two meanings are properly of the same general kind, but meanwhile, rather than argue tortuously in favour of my analysis of these cases, I shall merely point out that true reduplication of ma?- has a rather different semantic effect.

tu-ma?-ma?- ān lou-kāl' lou- 'Neither (of them) came.'
who they come not
clitic

This, true reduplication, derived from something like tu-ma?-tu-ma?- by typical processes of telescopic reduction, is characteristically disjunctive in its force ('whoever or other') and, characteristically for this language, induces the plural subject clitic. What I mean to have pointed out, in effect at least, is that in the 'false' reduplications of ma?- we are not dealing with something like simple intensification of the effect of ma?- by doubling.

It remains, so far as Lushai is concerned, for me to argue, again very briefly, that in fact the use of ma?- with personal pronouns in their contrastive-exclusive or contrastive-restrictive sense, which I have translated, loosely, as 'just' or sometimes 'very' is actually an instance of the more general case of a noun phrase or nominalisation in the scope of quantificational ma?-; that it is no accident that the two uses take the same phonological shape. I wish to claim, indeed, that we have, here, logical and grammatical identity, more or less, at least semantical continuity between the cases, rather than, say, a disjoint analogical extension of the meaning of a quantifier to that of a pronominal element, or conversely. And it will suffice, for this paper at any rate, to show that both are cases of proper logical quantification of the same sort.

What does a word like 'even' do? Logically it goes into some named set, so to speak, and induces a partition of that set in certain ways -- all quantifiers do that by definition, including cardinal and ordinal numbers (see Lehman 1974). It picks out a distinguished subset and, with it, we assert, in a sentence using 'even,' that such-and-such an individual, contrary to presupposition, is included in the distinguished subset. When I say

Even John failed,

I am asserting both that he failed and that one might have supposed he would have been in the subset of persons who could have passed that test or, perhaps, any test. Now 'just,' in the sense intended in the relevant Lushai examples of pronoun+ma?-, also picks out a distinguished subset and uses it to assert the same sort of thing, except that in this case it is a singleton subset. Thus,

Just I shall go

lets us know not only that I shall go, but more significantly, that I, the one who will go, am in a subset by myself in this respect and not, as might have been expected, with others -- it also, of course, implies that no other singleton subset of the kind exists. But, then, the two uses are so close, formally, that, save for superficial facts of English, they are hardly to be distinguished clearly; they are virtually not distinguished in Lushai, as we can now see. One could easily go ahead and argue that there is good motivation for the order of subdivisions of meaning between two successive uses of ma?-, as at the bottom of page 32. For, just as a subset of a set has individual elements as its proper members, just so, given the set-theoretical relation between members of a set or subset and singleton subsets as members of the power-set, does it make sense to embed singletons, and singletons alone, in larger subsets. I have no hint of an explanation, however, for why it is, that pronoun+ma?- and definite noun or proper noun+ma?- by themselves have only the sense of 'just' or 'very' for ma?-.

I turn now to Haka Chin, where, at least superficially, it might look as though ma? had to be a simple pronominal element after all. For, in this language, there is a simple alternation between lexically null pronouns (with, of course, clitic subjects) and pronouns, irrespective of person or number, with ma? : keima?, naŋma?, ama?, kanma?, nanma?, anma?. However, it is still the case, that the forms with ma?, that is, lexically overt forms, have a distinctly contrastive meaning. On the whole, nevertheless, Haka Chin has very few uses of ma? that seem to work as obvious logical quantifiers and the available published materials on the language fail to bring these out clearly. It is my intention to do so, here.

ma? hi cauk asi

means not

'*this is a book'

but, rather, 'this is a book,' viz., 'not some other thing, rather, this thing.' In short, ma? is not here necessarily functioning pronominally; Generally speaking, ama? serves only for human beings as referents and we probably have, here, @+ma?. This is made reasonably certain in view of the following:

(ma?) cu bantuk cu keima? zong ni? ka du? ve
like topic I too ergative I want likewise
'I also want something (just) like that.'

Not, I think, in standard Haka but certainly in the Western dialect of Thlantlaang and, I suspect, in Bawm, we have such things as

ai ma' kho lo 'It won't work, It is not self-consistent.'
can not

Here, ai is a case of reflexive object incorporation in the subject clitic (aa, kaa, naa, etc., in standard Haka). There is no way, with this complex incorporated form that ma' can be (part of) any pronominal or nominal element. In fact it is a surface verb in this case, which is interesting from two standpoints. First, in as much as quantifiers take arguments in their scope they are logically-syntactically verboid. Second, the meaning here agrees wholly with the quantificational meaning of 'even' and the like; for, ma' in this expression means 'to be even' 'to be included with' and the expression literally says 'It is not even with itself.' And this sense means, precisely, 'to be in the same (ordered) subset with.'

Finally, I wish merely to call attention to the fact (see the end of Lehman 1975b) that there is a probable historical cognation between ma', its sense given by the foregoing analysis, and the closely similar quantifier or systematically similar phonetic shape, hma, of literary Burmese.

Postscript

Since writing the original version of this paper, it has become clear to me (owing to suggestions from J.A. Matisoff) that I must try to relate the ma' of this paper to the ma of certain Loloish languages in Tibeto-Burman. For instance, Lisu ma functions as some kind of pronominal element of the third person, since it serves both as a true relative pronoun and as a very generalised numeral classifier. The two uses are syntactically different, in spite of Hope's attempt (1974: 89) to derive the latter from the former. To show this briefly, an example suffices. An expression such as 'two horses' simply does not mean anything like 'the horses which were two' and, analogically, Hope's own data (his examples 19, 19a and 19b) show this. For, we get

āmū myà- a 'The horses are many'
horse many Ending

āmū amyā ma 'two horses' (an enumerative phrase)

but āmū myā - a ma 'the horses which are many' (ma following the delative ending in relative constructions; since āmū, were this particular expression possible, could stand after ma, it is the head of the construction, with ma the wh-moved pro-element).

But this does not matter since (see Lehman 1974) classifiers are themselves pronominal elements of the nature of the 'one' in English 'this one' and the like.

Whether or not ma is quantificational in Lisu as is ma? in Lushai is, however, not clear from Hope's description, nor from those of Fraser or Roop (1922 and 1974, respectively). Lisu, at any rate, does possess a root third person pronoun, though for animates only, yí, but neither the absence nor the presence of such a root is definitive for deciding whether or not an element like ma is any kind of, say, clitic copy of such a root, since clearly third person clitics exist even in Lushai and similar Chin languages without such roots. At any event, ma is distinct from yí. Again, in its status as a generalised classifier, it is still not clear whether or not it is a contrastive quantifier taking in its immediate scope a lexically null pronominal or some kind, since, once more, even the languages lacking an independent third person pronoun have independent classifiers, often clitic, also.

In Lahu (Matisoff 1973: 49 ff.), on the other hand, the evidence seems more satisfactory. For we have, here yô, 'he,' 'she,' 'it,' and sû, 'one,' 'other(s),' also serving as a remote or contrastive third person pronoun. Also, we have two ways of forming interrogative pronouns: 'who' is a-sû ... le, where the specific question element is the final particle, le and sû is clearly the third person pronoun. 'what' or 'what kind of' is, however, a (tho?) ma ... le. Here, ma is in place of a pronoun but is not itself one of the pronouns above.

If now we combine the Lisu and Lahu observations and notice that in Lisu there is no lexical inanimate third person pronoun (only yí, the singular or plural animate pronoun, cognate with Lahu yô), we can guess that ma, even in Loloish, must, at least at an earlier time, have come, as in Lushai, to stand for rather than actually be a third person pronoun.

Moreover, in Lahu it is notable, that 'who' overlaps or employs a contrastive pronoun, sû; for, then, ma, in 'what,' must also have just the focal-contrastive meaning its cognate has in Lushai. It seems, from the data given, that Lahu wh-questions are, indeed, semantically (cf. Karttunen 1977) demands to know or identify something or someone as the *i*th or *j*th member of some class or set. On this view, for example, 'who' is a demand to know that either this or that person is the one of which something is predicated. All this at least begins to make it appear even more likely that, at least historically, the analysis of ma? in Lushai applies also to the Loloish branch of Tibeto-Burman.

NOTES

¹ An earlier version of this paper was presented to the Ninth International Conference on Sino-Tibetan Languages and Linguistics at Copenhagen, in October 1976.

² This is a particularly complicated matter. The absence of an

independent lexical root word for the third person pronoun is no proof that the third person pronoun is absent syntactically, since it can easily be some kind of non-lexical 'dummy.' Nor is the absence of the subject clitic. As seen below, there is a postposed clitic of the third person that is the result of *wh*-movement and this means that some sort of non-lexical third person pronoun is after all present, hence subject to *wh*-movement. This clarification is made at the suggestion of Mark A. Lehman.

Furthermore, this situation raises an important general question: why is the third person in particular lexically empty? The answer surely lies in the distinction between what Lawler (discussing Zwicky 1977) termed speech act pronouns and non-speech-act pronouns. Briefly, I and II are, in any given sentence or discourse, uniquely determined as to reference. I refers to the speaker, the current subject of any supposed performative verb; II refers to the indirect object of that performative, the hearer. III, on the other hand, is not determined uniquely as to its reference. In short, it requires an antecedent either syntactically or discourse-wise; it is strictly anaphorical. To say the same thing, I and II are not strictly anaphorical. The so-called 'obviative,' a pronoun occurring in some languages and meaning, roughly, 'whoever' or 'one,' is, of course, a special case of III and in fact subsumes I and II in its range of potential reference. In the Tibeto-Burman languages under examination, it can be hypothesised, that III is non-lexical precisely because of its open, or anaphorically determined referentiality. That, as colleagues inform me, and as Zwicky's (1977) paper observes, too, there are also languages with personal pronouns equivocal as between I and II, II being distinctive, here, can be compatibly accounted for: I and II fall together as speech act pronouns in a hierarchy, in which I implies II and II takes precedence over II. Thus, one also accounts for the inclusion of I and II in the so-called first person plural inclusive 'we.'

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A NOTE ON THE INTRANSITIVE NATURE OF THE JAPANESE RAISING
VERB omo'u AND ITS IMPLICATIONS*

Seiichi Makino

This article is concerned with the nature of the typical Japanese raising verb omo'u 'think/feel'. It is maintained, contrary to popular belief, that the verb in question is not a transitive verb but an intransitive verb. It is also argued that Japanese omo'u presents a real counterexample to Postal & Perlmutter's allegedly universal laws about raising: namely Host Limitation Law, Relational Succession Law and Relational Annihilation Law.

My purpose in this short paper is a modest one: I would like to show two things: first, that the most typical and almost unique Japanese raising verb omo'u is an intransitive verb, contrary to generally accepted categorization and secondly, that because the verb is intransitive, Japanese raising provides a counterexample to the laws on raising proposed by Postal & Perlmutter (1974).

First, I present three pieces of evidence that omo'u is not a noun phrase but an adverbial phrase. The verb in question requires the complementizer to as in:

- (1) Taroo wa Hanako ga han'nin da to omotta.
topic subj. culprit is that thought
'Taroo thought that Hanako was the culprit'

The first piece of evidence is the fact that the to-complement is not a direct object noun phrase, simply because the complement cannot be followed directly by the direct object marker o.

- (2) *Taroo wa Hanako ga han'nin da to o omotta.

The second piece of evidence for the intransitive nature of omo'u is that the clefting rule that applies only to a noun phrase cannot apply to the to-complement. Thus, one cannot get (3) from (1) by means of clefting. This simply shows that the to-clause does not satisfy even the minimum condition for its being a direct object noun phrase, namely that it be a noun phrase.

- (3) *Taroo ga omotta no wa Hanako ga han'nin da to da.
'It is that Hanako was the culprit that Taroo thought'

The third evidence is the parallelism in semantic function between the adverbial marker to and the complementizer to. The adverbial marker to is exemplified in such sentences as (4).

- (4) (a) Taroo wa biiru o gokun (gokuri, gabo-gabo, gabu-gabu) to
beer
non'da-
drank

'Taroo drank beer with the sound of gokun (gokuri, gabo-gabo, gabu-gabu)'

- (b) ame ga zaa-zaa (sito-sito, syobo-syobo) to futta.
rain subj. fell
'The rain fell with the sound of zaa-zaa (sito-sito, syobo-syobo)'

In the above sentences to is preceded by an onomatopoeic expression, and the entire phrase functions as a kind of manner adverb. The manner adverbial nature is more obvious in (5) where non-auditory symbolisms rather than auditory symbolisms are used.

- (5) Taroo wa sesse (norari-kurari) to hataraita.
hard slowly worked
'Taroo worked very hard (slowly)'

The same marker to is also used as a quotation marker as in (6).

- (6) Taroo wa Hanako ga han'nin da to itta.
said
'Taroo said that Hanako was the culprit'

My view here is contrary to the traditional grammarians' claim that to's in (4), (5) and (6) are semantically separate entities. I am not claiming, however, that the underlined to-clause of (6) is not a complement. In (6), instead of the sound symbolism one has a direct/indirect quote of what Taroo said, but it is important to note that both onomatopoeia of (4) and quotes of (6) are representations of sounds.

Now, when to is used with the verb omo'u it indicates a quote of what the subject is thinking (i.e. inner voice, so to speak) and the manner in which the subject's judgment is made.

The to-clause with omo'u is just an extension of non-auditory symbolisms as in (5). Three pieces of evidence given above show almost conclusively that the to-complement is not a direct object noun phrase in a sentence such as (1), but an adverbial quote phrase.

Next I am going to show that the Japanese 'raising' verb omo'u also is very likely an intransitive verb, contrary to popular belief.

Firstly, omo'u cannot co-occur with the stative auxiliary verb te aru which co-occurs only with transitive verbs.

- (7) (a) doa ga simete aru.
door close (t.v.)
'The door has been closed'
(b) *doa ga simatte aru.
close (i.v.)

a transitive verb. The reader might wonder if there exists a transitive omo'u along with the intransitive omo; indeed, I will discuss sentences such as (16b) which appears to have the transitive omo'u. Also the reader might wonder whether or not we have two homophonous, semantically distinct case markers o. My analysis of omo'u does seem to show, again contrary to the popular belief, that we still have the archaic case marker o which indicates cause for human emotions. Observe the following:

- (12) (a) Murasaki no nihoru imo o ninkim araba, hitozuma ywa ni ware
epithet beautiful girl detestable-if someone's wife because I
as (16b) which appears to have the transitive omo'u. Also the reader might
wonder whether or not we have two homophonous, semantically distinct case
markers o. My analysis of omo'u does seem to show, again contrary to the
popular belief, that we still have the archaic case marker o which indicates
cause for human emotions. Observe the following:
- koi me ya no. (Manyoshu no 771)
love
'If I hated a beautiful lady like you, surely I couldn't love
you, because you are a married woman'
- (b) Kaguyahime no yamome naru o nagekasikereta.../Taketori
shining princess single girl lamentable Monogatari no 811
(Thinking it lamentable that the shining princess is still
unmarried,...)

Thirdly, there are a few Japanese psychological predicates that represent such an internal human feeling that the subject is restricted to the first person singular, unless the predicate is past tense or embedded into a larger construction. And all the predicates constrained in this manner are intransitive, emotive adjectives.

- (13) (a) Boku (???anata, ???Hanako) wa Taroo ga suki desu.
I you like
'I (you, Hanako) like(s) Taroo'
- (b) Boku (??? anata, ???Hanako) wa gao'gogaku o benkyosinai desu.
linguistics study - want
'I (you, Hanako) want(s) to study linguistics'
- (c) Boku (??? anata, ???Hanako) wa tottomo kanashi (ureshi,
very sad glad
urayamashi) desu.
envious
'I (you, Hanako) am (are, is) very sad (glad, envious)'

If we look at sentences of (13) in terms of the degree of impersonality, they are definitely on the side of the impersonal construction due to the heavy restriction imposed on the grammatical person. There are languages in which the entire predicates in (13) are, in fact, impersonal. Now, this sort of restriction on the grammatical person of the subject reveals itself exactly alike in the omo'u construction.

- (14) Boku (??? anata, ???Hanako) wa Taroo ga baka da to omoinasu.
fool is
'I (you, Hanako) think (s) that Taroo is a fool'

One here recalls that the English verb think was historically of impersonal nature as shown in (5).

- (15) me thinks we shal be strong ynough. (NED)

Fourthly, there are quite a few omo'u constructions in which not only the surface direct object is missing, but also the underlying direct object is inconceivable.

- (16) (a) Zibun no omo'u toori ni suru.
self just as do
'One does things as he likes'
- (b) Omo'u ni makasete sigoto o suru.
to leave work do
'One does his work as he likes'
- (c) Omo'u yoo ni hakadoranai.
as things don't go well
'Things don't go well as expected'
- (d) Ware omo'u yue ni ware ari.
I so I exist
'I think, so I am'
- (e) Omotta hi ga kichizitsu.
day lucky day
'The day you decide on something is a lucky day'

Fifthly, there are a set of intransitive verbs in Japanese that basically indicate some spontaneous change, such as magaru 'bend', makeru 'be defeated', naruru 'become', nokoru 'remain', sumu 'finish', wakaru 'understand', yowaru 'weaken' etc. If the subject for these verbs is human it is implied that the human behavior (identified by the verb) is a natural phenomenon; in other words, it is such an 'indirect' expression of human behavior that it is 'polite' to use it especially when the person one is talking to or one is referring to is your superior. As a matter of fact, the verb naruru 'become' is used as an auxiliary verb in an 'honorific' polite verb form as in:

- (17) Sensei wa gengogakka no shunin ni o-nari-natta.
prof. linguistic's head into become honorific aux.
department
'The professor became the head of the linguistic department'

Along with honorific' polite form we have the 'humble' polite form which is to be used when the subject of the sentence is the speaker and when he is speaking to his superior, as in (18):

- (18) Watakushi ga sono nimotsu o o-mochi-itasimasu.
I subj. that luggage acc. carry humble aux.
'I carry your luggage'

Now, interestingly, the set of 'intransitive' verbs in question cannot take 'humble' form. It is because they are weakly but inherently 'honorific'. One can emphasize his politeness by applying the 'honorific' formation rule to them as in (19), but one can hardly turn the 'honorific' intransitive verbs into 'humble' intransitive verbs as shown in (20), simply because 'honorificness' and 'humbleness' are mutually exclusive, semantic notions. Thus:

- (19) (a) Sensei, nanzi goro made o-nokori-ni narimasu ka?
 prof. what about until remain honorific aux.
 'Professor, until about when are you going to stay here?'
 (b) Sensei wa choodo ano kado o o-magari-ni narimasita.
 prof. just that corner turn
 'The professor just turned that corner over there'
- (20) (a) *Watakusi ga sensei no kabanmochi ni o-nari-itasimasu.
 I subj. prof. 's secretary into become humble aux.
 'I'll be your private secretary, Sir'
 (b) *Sensei, yoku o-wakari-itasimasita.
 prof. well understand humble aux.
 'Professor, now I understand well'

As far as I know, all the transitive verbs that can take a human subject can take both the honorific and humble forms. How about the verb under discussion? Omo'u behaves exactly the same as the inherently honorific, intransitive verbs as shown in (21), implying that omo'u is an intransitive verb.

- (21) (a) Sensei kore doo o-omoi-ni narimasu ka? (Honorific)
 prof. this how think honorific aux.
 'Professor, what do you think of this?'
 (b) *Watasi wa soo o-omoi-itasimasu. (Humble)
 I so think humble aux.
 'I think so'

These five pieces of evidence that omo'u is an intransitive verb are fairly strong. One objection one might raise to my conclusion is the apparent impossibility to account for the direct object marker o in (22b) which is assumed to be derived from (1) which I repeat here as (22a):

- (22) (a) Taroo wa Hanako ga han'nin da to omotta.
 culprit is that thought
 'Taroo thought that Hanako was a culprit'
 (b) Taroo wa Hanako o han'nin da to omotta.
 'Taroo thought Hanako to be a culprit'

If raising exists in Japanese, as I believe it does, then I assume that after Hanako is raised, Han'nin da to becomes amalgamated into a transitive verb phrase and takes Hanako as its direct object? The newly created transitive verb as a result of the raising is rather a tight unit which, for example, cannot be split by the direct object phrase. Thus:

(23) *Taroo wa han'nin da to Hanako o omotta.

Let me now discuss the intransitive nature of the verb omo'u in the light of general theory of the intransitive/transitive distinction.

I propose the following to be a very tentative list of the distinctive features of intransitive and transitive verbs.

INTRANSITIVE VERB	TRANSITIVE VERB
(i) cannot take direct object. basically one-place.	can take direct object. basically two-place.
(ii) cannot take the reflexive pronoun.	can take the reflexive pronoun.
(iii) the subject cannot be converted into a passive subject.	the subject can be converted into a passive subject.
(iv) semantically there is no directed action; normally represent at least the following concepts:	semantically there is directed action; normally represent at least the following concepts.
(a) self-propelling movement. (e.g. <u>go</u> , <u>come</u> , <u>arrive</u> , <u>stand</u> , <u>walk</u> , <u>swim</u> , etc.)	(a) causative (e.g. <u>show</u> , <u>drop</u> , <u>attach</u> , <u>stop</u> , <u>turn</u> , etc.)
(b) spontaneous change. (e.g. <u>expand</u> , <u>become</u> , <u>shrink</u> , <u>remain</u> , <u>turn</u> , <u>burn</u> , <u>begin</u> , <u>dry</u> , <u>melt</u> , etc.)	(b) exchange. (e.g. <u>give</u> , <u>get</u> , <u>receive</u> , <u>love</u> , etc.)
(c) uncontrollable human psychology. (e.g. <u>retroice</u> , <u>grieve</u> , <u>relax</u> , etc.)	(c) creative action. (e.g. <u>make</u> , <u>write</u> , <u>create</u> , <u>fix</u> , <u>teach</u> , etc.)
(d) life, death, existence. (e.g. <u>live</u> , <u>die</u> , <u>exist</u> , etc.)	(d) report. (e.g. <u>talk</u> , <u>communicate</u> , <u>say</u> , <u>inform</u> , etc.)
(v) spontaneity is a predominant feature.	causativity is a predominant feature.

(vi)¹ if language has the present perfective tense, then the auxiliary verb could be a 'be' verb.

if a language has the present perfective then its auxiliary verb could be a non-'be' verb.

The dichotomy of intransitive/transitive verbs is not as clear as it has been claimed to be. My claim implied in the above list of features is that the distinction in question should be made in terms of a bundle of universal features. In so doing we can characterize a given verb more realistically in the entire gamut of intransitive/transitive scale. At any rate, the particular verb under discussion (i.e. omo'u) satisfied all the listed characteristics germane to an intransitive verb except (vi).

If my characterization of the raising verb omo'u as being an intransitive verb is correct, then the verb seems to constitute a real counterexample to Postal and Perlmutter's (1974) allegedly universal laws about raising.

First let me here summarize all basic laws which omo'u violates radically.

- (A) Host Limitation Law: Only a term (i.e. subject, direct object, indirect object) of a grammatical relation can be host (i.e. the NP out of which a promotee ascends) for an ascension.

The HLL is violated simply because to-clause (as in (1)) is not an NP but an adverbial clause.

- (B) Relational Succession Law: An NP promoted by an ascension rule assumes the grammatical relation borne by the host out of which it ascends.

The NP Hanako o in (17b) is a direct object NP, but the to-clause (i.e. Hanako ga han'nin da to) out of which the Hanako ascends is not a direct object NP but a mere adverbial clause.

- (C) Relational Annihilation Law: If an NP assumes a grammatical relation to a verb, then the NP that previously bore that grammatical relation to the verb ceases to bear any grammatical relation whatever; i.e. it becomes a 'chomeur'.

In Japanese the to-clause is not an NP anyway, so the laws simply do not make any sense.

Why does the Japanese omo'u violate those supposedly universal laws for ascension? Well, the reason for this could be either one of the two: (1) Japanese omo'u is a real counterexample to the universal laws or (2) in Japanese we do not have raising. Kuno (1976)'s paper on raising seems to

defy any counterargument on (2) at this juncture, so there is no alternative but (1), namely, Japanese omo'u does constitute a true counterexample to the Postal & Perlmutter's laws, thus casting doubt on the universality of those laws and possibly on an important aspect of the theory of relational grammar.

NOTES

*An earlier version of this paper was read on August 1, 1977 at the Faculty Seminar, Japanese School, Middlebury College, Vermont. I appreciate comments of Seiichi Nakada and Susumu Nagara. Also I would like to thank Charles Kisseberth who gave me valuable comments on the earlier version of this paper. But any errors are, of course, all mine.

¹See discussion of emotive verbs by N. Macawley (1975), esp. pp. 78-86.

²Fairly strong arguments for raising in Japanese are given in Kuno (1976) and so far no strong counterarguments have been advanced.

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ON THE FUNCTION OF RIGHTHAND NPs IN JAPANESE

Masako Ogura

In this paper, I will account for some characteristics of Japanese sentences like:

John ga Ø kisushi-ta yo, Mary ni.
nm kiss past dm
'John has kissed (her), Mary.'

The structural and functional/pragmatic nature of this type of sentences will be examined in the first section. It will be shown, in this section, that recoverability of an NP moved to the end of the sentence plays an important role in determining the acceptability of the sentence. The second section is devoted to characterize an NP moved to the end of an acceptable sentence of this type. Discourse anaphoricity and newness of an NP deleted from the first part of a sentence will be shown to play a decisive role in determining the acceptability of the sentence. I will propose to call the anaphoricity or genericness of lexical items in the given discourse the absolute degree of recoverability and semantic relations which lexical items enter into the given sentence (new/old) the relative degree of recoverability. Then, it will be shown that the degree of acceptability of this type of sentence depends on the degree of relative and absolute recoverability of the lexical item deleted from the first part of the sentence.

1. There is a type of Japanese sentences such as those in (1) (hereafter I will call them RD sentences) which have right hand NPs attached after VPs.

(1)a. Ki -ta yo, basu ga.¹
come past bus nm
'(It) is coming, a bus.'

b. Bob ga sakki denwashi -ta yo, John-ni.
nm while ago telephone past dm
'Bob telephoned some time ago, to John.'

In this section, I will describe the structural and functional characteristics of this type of sentences.

1.1. The significant structural difference between (1) and standard types of Japanese sentences is that sentences in (1) have NPs following matrix verbs. Japanese is a SOV language and word order is relatively free except that a

predicate always comes at the end of a sentence. In other words, those sentences in (1) are a rare type of Japanese sentences² that have an element following a VP.

1.2. Haraguchi (1973) gave several arguments, mainly selectional restriction type arguments, to prove that (1) is related with (2):

- (2)a. Basu ga ki -ta yo.
 bus nm come past

'A bus is coming.'

- b. Bob ga John ni sakki denwashi -ta yo.
 nm dm while ago telephone past

'Bob telephoned to John some time ago.'

He has demonstrated that (1) is grammatical only if (2) is grammatical. Comparison of the first part of an RD sentence (1) ---the part of a sentence preceding a comma---with a corresponding sentence in (2) indicates that an NP is missing in the first part of a sentence in (1). A postposition which follows the missing NP is also deleted. A righthand NP in (1) must be identical with the missing NP. The righthand NP must also be followed by a postposition which follows the NP in an original position in (2). In other words, a sentence in (1) is formed from that in (2) by putting a comma after the sentence and moving NP+post-position to the right of the comma. A subject NP+ nominative case marker, basu ga, of (2a) is moved to the end of the sentence to form (1a). (1b) is formed by moving an object NP+ dative case marker, John ni, to the end of the sentence.

This process makes the first part of a sentence in (1) look like elliptic.

- (1')a. \emptyset ki-ta yo.

- b. Bob ga sakki \emptyset denwashi-ta yo.

In an appropriate context, however, these sentences are perfectly acceptable to native speakers. They are acceptable when they can be interpreted that their subject and indirect object are inter-sententially pronominalized. In the context, native speakers interpret truth values of (1'a) and (1'b) as equivalent to those of (1a) and (1b) respectively.

1.3. The environment where sentences of the type in (1) is uttered is very restricted.

1.3.1. They are uttered only in informal conversations. Since sentential particles yo, zo, ze, ne and etc. signal that a sentence is uttered in informal conver-

sations, the acceptability of this type of sentences is higher if they are followed by this type of sentential particles.

1.3.2. A speaker utters (1a) or (1b) in the context where he can pronominalize basu 'bus' or John in his own mind because his mind has been occupied by "Whether bus is coming" or "John's action". He attaches NPs after predicates when he wants to make the sentences non-elliptic or when he realizes, while he is speaking the first part, that the first part of RD sentences may be ambiguous to hearers. For instance, (1a) may be uttered by a boy who is waiting for a bus with his friends. Their conversation may be:

A: Koko no basu wa nakanaka konain-da.
here of bus nm very come not

'This bus does not come very often.'

B. Boku wa kinoo wa 30 pun mo mat - ta yo.
I nm yesterday minutes wait past

'I waited it for 30 minutes yesterday.'

Then A catches a bus in sight and utters (1a) to inform his friends that a bus is coming. In this context, it is clear that a bus is a topic of their conversation. Boys are concerned with whether it comes or not. They are not concerned with what will come. Therefore, the deleted information, a bus, is recoverable from the context.

If the boys are waiting for a bus and a streetcar, -- some boys are waiting for a bus and others are waiting for a streetcar -- (1a) is not an appropriate sentence to utter. Since they are concerned to find out what, a bus or a streetcar, is coming as well as when it is coming in the context. Basu 'a bus' can not be deleted from the first part of the sentence because it cannot be recovered from the context.

1.3.3. It is observed in 1.3.2. that an NP is deleted from the first part of a sentence when it is recoverable from a given context. This observation can be exemplified more explicitly by contrasting (3) against (4).

(3) A: Kimi wa dare o .Mary ni shookaishi -fa no?
you nm who am dm introduce past Q

'Who did you introduce to Mary?'

B: (Watashi wa) Bob o shookaishi-ta yo, Mary ni.
I nm am introduce past dm

'I introduced Bob (to her), to Mary.'

(4) A: Kimi wa Bob o dare ni shookaishi-ta no?
you nm am who dm introduce past Q

'Who did you introduce Bob to?'

B: #(Watashi wa) Bob o shookaishi-ta yo, Mary ni.³
I nm am introduce past dm

'I introduced Bob (to her), to Mary.'

The sentences uttered by B in (3) and (4) are identical RD sentences. An indirect object Mary ni is deleted from the first part and attached at the end. This sentence is acceptable as an answer to a question in (3) but unacceptable in (4). It is acceptable in (3) because it is uttered when Mary is recoverable information in the context. In (4), on the other hand, the relevant information conveyed by the speaker B is the identity of the person, Mary, to whom the speaker introduced Bob. Since the new information, Mary ni, is deleted from the first part of the RD sentence, it is not recoverable from the context. The sentence is hence unacceptable as an answer to the question in (4).

1.3.4. RD sentences tend to be uttered when a speaker wants to emphasize a certain part of the sentence. Compare sentences (1a) and (2a): (repeated below)

(1) a. ki - ta yo, basu ga.
come past bus nm

'(It) is coming, a bus.'

(2) a. basu ga ki - ta yo.
bus nm come past

'A bus is coming.'

Native speakers intuitively feel that a speaker of (2a) merely states a fact while a speaker of (1a) indicates that a relevant part of the information is the first part of the RD sentence. (1a) is uttered under the similar environment to "Here comes a bus!".

I speculate that, since a word order of a Japanese simplex sentence is free except that a verb always comes at the end, a speaker tends to bring an NP which

conveys more relevant information to the front. For instance, the following two sentences may be uttered under slightly different environment.

- (5) a. (watashi wa) John ni Mary o shokaishi -ta yo.
I am dm am introduce past

'I introduced John to Mary.'

- b. (watashi wa) Mary o John ni shokaishi -ta yo.
I nm am dm introduce past

'I introduced Mary to John.'

A speaker more likely utters (5a) when John is the new information while he utters (5b) more likely when Mary is the new information.

If it can be assumed that the tendency holds not only between NPs but also between NPs and a predicate, it explains why a speaker uses an RD sentence to emphasize the information expressed by the first part of the sentence. A speaker utters (1a) rather than (2a) in certain occasions because he wants to emphasize a relevant part of the information, ki-ta yo '(It) is coming'.

In summary, I have observed in 1.3.1 that an RD sentence is used only in informal conversations. In 1.3.2 and 1.3.3, I have discussed that an RD sentence may be uttered when an NP deleted is recoverable from the given context. It is speculated in 1.3.4 that a speaker utters an RD sentence when he wants to emphasize the information conveyed by the first part of the RD sentence.

2. In analyzing the function of particles wa and ga, Kuno (1973) has used the concept of anaphoricity and genericness as a crucial factor. Kuno (1972) also examined the uses of wa and ga from another angle, namely, from the view point of what is old, hence predictable information and what is new, hence unpredictable information in a given sentence.⁴ He observed that ga as subject marker in matrix clauses always signals that the subject conveys new information.

The discussion in 1.3.2 and 1.3.3 reveals that an NP which is deleted from the first part of an RD sentence must be recoverable from a context. If it is true that a new information is not recoverable from a context, then, why the RD sentence (1a) is acceptable? The acceptable sentence is formed by deleting a subject, basu 'a bus', which is followed by ga and hence conveys new information. In this section I will examine how the concept of anaphoricity and old/new information have bearing on the recoverability of NPs in RD sentences.

A summary of Kuno's work on this subject will be given in 2.1. In 2.2, I will examine RD sentences in which subjects with a variety of functions (theme, contrasted element, exhaustive listing element and neutral description) are deleted from the first part. It will be shown that deletion of subjects with certain functions from the first part generates unacceptable RD sentences. Based on this observation, a hypothesis will be proposed that deletability of an NP from the first part of an RD sentence depends on anaphoricity and newness of the NP. In 2.3, I will investigate how two factors of recoverability, absolute and relative recoverability of an NP, interact with deletability of the NP from the first part of an RD sentence.

2.1 A Japanese matrix subject is marked by wa when it is the theme or the contrasted element. Ga as a subject marker, on the other hand, is either for exhaustive listing or for neutral description.⁵ These four distinct functions of a subject are exemplified in the followings.

- (6) John wa konogoro zutto uchi ni imasu. [Theme]
nm lately all the time home at be

'Speaking of John, he is always at home in these days.'

- (7) John wa paati ni kimashi -ta. [Contrast]
nm party to come past

'John came to the party (but Bob did not).'

- (8) Mary ga kono yofuku o nuimashi-ta. [Exhaustive Listing]
nm this dress dm sew past

'It is Mary who sewed this dress.'

- (9) John ga asoko o hashit-te-imasu. [Neutral Description]
nm there at jog prog.

'John is jogging over there.'

When a subject is the theme of a sentence, as in (6), it must be either anaphoric (i.e. previously mentioned) or generic. The rest of the sentence constitutes new information. The sentence (6), in which John is the theme, is uttered only when both the speaker and hearer(s) know who is John. Since the sentence is a statement about John, new information of the sentence is expressed by its predicate.

There is no constraint concerning anaphoricity for a subject when it is interpreted as a contrasted element. It must constitute new information of the

sentence while the rest of the sentence conveys old information. For example, John in (7) can be either anaphoric or non-anaphoric, but it must constitute new information of the sentence. The sentence has a connotation that the subject is contrasted with someone (or something) whose action or state makes distinct contrast with that of the subject. Therefore, (7) sounds most natural if it is followed by something like

dakedo Bob wa kimasen -deshi-ta.
but nm come not past

'But Bob did not come.'

where John's action and Bob's action make a contrast.

A situation of exhaustive listing interpretation is similar to that of contrasted element. A subject NP is either anaphoric or non-anaphoric. It constitutes the sole new information of a sentence. Therefore, (8), whose subject is interpreted as exhaustive listing, is uttered as an answer to the following question:

dare ga kono yofuku o nuimashi-ta ka?
who nm this dress am sew past Q

'Who sewed this dress?'

In this context, it is obvious that the subject of (8) conveys new information while the remaining part of the sentence conveys old information.

There is no constraint of anaphoricity for a subject of neutral descriptive sentence either. It conveys new information in that the entire sentence conveys new information. A sentence of neutral description presents an objectively observable action, existence or temporary state. Therefore acceptability of (9) increases if it is preceded by:

goran-nasai!
'Look!'

which signals that the sentence that follows expresses the speaker's objective observation.

Relations between function of a matrix subject, kind of subject marker it takes, its anaphoricity requirement and semantic role (new/old) are summarized in the following table.

Table 1

function of a subject	subject marker	anaphoricity of a subject	semantic relation of a subject to a given S.	semantic relation of a predicate to a given S.
theme	wa	required	old ⁶	new
contrasted element	wa	not required	new	old
exhaustive listing	ga	not required	new	old
neutral description	ga	not required	new	new

2.2. Here, I shall examine the grammatical status of RD sentences in which a subject NP with the function of either theme, contrasted element, exhaustive listing or neutral description is deleted from the first part. This examination will lead to clarifying the nature of an NP which is deletable from the first part of an RD sentence.

First, acceptability of an RD sentence in which a thematic subject is deleted, from the first part will be examined.

- (10) A: tenkiyoho ni yoreba kyoo wa ame no hazu desu ne.
'According to the weatherforecast, it is supposed
to rain today, isn't it.'

B: moō fut-te-imasu yo, ame wa [Theme]
already fall prog. rain nm

'(It) already started, speaking of rain.'

- (11) A: konogoro boku wa John ni awa-nai na.
'I haven't seen John lately.'

B: sakki puuru de oyoi -de-imashi-ta yo, John wa. [Theme]
a while ago pool at swim prog. past nm

'(He) was swimming in the pool a while ago, John.'

RD sentences in (10) and (11) are acceptable. In general, a thematic subject is always deletable from the first part to generate an acceptable RD sentence. For stating this observation in terms of anaphoricity and newness, I will combine this observation with the fact that a theme must be either discourse anaphoric or generic. A tentative hypothesis will be like:

Hypothesis 1.

An NP is deletable from the first part of an RD sentence, if only if it is either anaphoric or generic.

This hypothesis correctly predicts that no NP is deletable if it is neither discourse anaphoric nor generic.

The hypothesis 1, however, is falsified by ungrammaticalness of RD sentences in which a contrasted or exhaustive listing element is deleted from the first part. Consider:

- (12) A: John to Tom to Bill wa gakusei desu ka?

'Are John, Tom and Bill students?'

B: *gakusei desu yo, John wa. [Contrasted Element]
student be nm

(dakedo gakusei de wa ari-masen yo, Tom to Bill wa.)
but student be neg. and nm

'(He) is a student, John. But (they) are not students, Tom and Bill.'

- (13) A: Ford to Carter no dochira ga daitoryo ni

senkyos-are-mashi-ta ka?

'Who won in the presidential election, Ford or Carter?'

B: *daitoryo ni senkyo-sare -mashi-ta yo, Carter ga
 president for elect pass past nm
 Exhaustive Listing

¹(He) was elected for the president, Carter.

An RD sentence in (12), which is unacceptable, is generated by deleting contrasted element from the first part of the sentence. The sentence is uttered

after the name of a boy, John, is mentioned by the speaker A. This implies that the RD sentence (12) is unacceptable even though it is generated by deleting a discourse anaphoric NP from the first part. This fact contradicts to the hypothesis 1, which claims that all discourse anaphoric NPs are deletable. Similarly the RD sentence in (13) is unacceptable. Since Carter is discourse anaphoric when the RD sentence is uttered, the unacceptability of the RD sentence (13) also indicates that a discourse anaphoric NP, Carter, is not deletable from the first part. This, too, contradicts to the hypothesis 1.

This evidence suggest that the hypothesis 1 is too strong. It predicts unacceptable RD sentences (12, 13) as acceptable. That is, the discourse anaphoricity is not a necessary condition, though it is a sufficient condition, for an NP to be deleted from the first part of an RD sentence. Comparison between the RD sentences in (10, 11) and (12, 13) reveals that a subject NP conveys new information in the latter while it conveys old information in the former. This is because the NP deleted from the first part of the RD sentence is a thematic subject in (10) or (11), while it is a contrasted element and an exhaustive listing, respectively, in (12) and (13). Hence, the Hypothesis 1 is modified as:

Hypothesis 2

An NP is deletable from the first part of an RD sentence if and only if it is either anaphoric or generic and it conveys old information.

This hypothesis correctly predicts distinction between acceptability of the RD sentences in (10, 11) and (12, 13).

Hypothesis 2 is derived by examining sentences whose subjects are thematic, contrasted element and exhaustive listing. Next, I will examine whether the above hypothesis correctly predicts grammatical status of an RD sentence in which a subject is deleted from a neutral description sentences. Observe the following sentences:

(14) ara, mukoo kara yat-te-kuru wa,
ah! over there from come

anata no ototoo-san ga.
your brother nm

'Oh, look! (He) is coming over there, your brother.'

Because of its lexical nature, the subject of (14), anata no ototoo-san 'your brother', is discourse anaphoric. The speaker states his objective observation in this neutral description sentence. We have seen, in the Table 1, that

a subject of a neutral description sentence conveys new information. The hypothesis 2, therefore, falsely predicts that the RD sentence (14) is not acceptable. This indicates the following: it is not a sufficient condition to delete an NP from the first part of a sentence that the NP conveys old information. A closer examination reveals that there is a distinction in the newness of information conveyed by the subject of neutral description, on one hand, and the contrasted element and exhaustive listing element, on the other. The latter conveys new information while the rest of the sentence conveys old information. On the other hand, the whole sentence conveys new information in the neutral description sentence. This leads to modifying the hypothesis 2 as:

Hypothesis 3

An NP is deletable from the first part of an RD sentence if and only if 1) it is either discourse anaphoric or generic and 2) it does not constitute the sole new information of the sentence (the rest of the sentence convey old information).

If we state Hypothesis 3 in terms of function of an NP, it will be like:

An NP is deletable from the first part of an RD sentence if and only if 1) it is thematic or 2) it is an discourse anaphoric or generic NP element of a neutral description sentence.

Kuno (1972) observed some syntactic phenomena⁷ in which the distinction between old and new information plays a decisive role. Hypothesis 3 indicates that this distinction alone does not play a crucial role in deleting an NP from the first part of an RD sentence. New information can be deleted from the first part of an RD sentence if the rest of a sentence also conveys new information. An NP can not be deleted, however, if the rest of a sentence conveys an old information. This implies that there is distinct degree of newness and it plays an important role in deleting an NP from the first part of an RD sentence. Relation between the function of a subject and an acceptability of an RD sentence formed by deleting the subject is shown in Table 2.

2.3. Since an NP deleted from the first part of an RD sentence must be recoverable from a context, the hypothesis 3 implies that:

An NP is recoverable from a context if and only if 1) it is discourse anaphoric or generic and 2) it does not constitute sole new information in a given sentence.

The above statement indicates that the recoverability of lexical items in a certain context depends on two factors. The one is anaphoricity (or genericness) of lexical items in the given discourse and the other is semantic

Table 2.

function of subject	anaphoricity of subject	semantic rel. of sub. to S	semantic rel. of the rest of S to S	acceptability of RD S formed by attaching subject at the end
theme	anaphoric	old	new	acceptable
contrasted element	anaphoric or non-anaphoric	new	old	unacceptable
exhaustive listing	anaphoric or non-anaphoric	new	old	unacceptable
neutral description	anaphoric	new	new	acceptable
	non-anaphoric	new	new	unacceptable

relations which lexical items enter into the given sentence. From hereon, I will call the former factor the absolute degree of recoverability and the latter the relative degree of recoverability. An absolute degree of recoverability is high if a lexical item is discourse anaphoric or generic and low otherwise. Relative recoverability is high if it conveys old information and low if it conveys new information while the rest of the sentence conveys old information. When a lexical item conveys new information in that the entire sentence conveys new information, its relative recoverability is in between.

So far, I have assumed that an absolute recoverability is binary. That is, any information is either absolutely recoverable or not. The following RD sentences, (15), (16), (17) and (18), in which subject NPs of neutral description sentences are deleted from the first part, show that this assumption is not necessarily correct. (The last one in each set is the RD sentence.)

(15) A: (anata wa) nippon ni kankoryoko ni yukare-tan desut-te?

'I heard that you went to Japan for sightseeing.'

B: ehe, ikkagetsu hodo de hobo mi-te-mawarimashi-ta.

'Yes, I visited many places in a month or so.'

A: sore wa yokat-ta desu ne.

'Oh, that's wonderful!'

B: ?totoemo subarashikat -ta desu yo, Hakone no
very wonderful past be of

momiji ga.
autumn leaves nm

'(They) were most beautiful, autumn leaves at Hakone.'

(16) A: kino machi ni kaimono ni yuki-mashi-ta.

'Yesterday, I went to downtown for shopping.'

B: nanika ii mono ga ari-mashi-ta ka?

'Did you find something nice?'

A: ?sugoku yasukat -ta desu yo, fuyunono no koto ga.
very cheap past be winter of coat nm

'(They) were very cheap, winter coats.'

(17) A: nandaka sora ga kuraku nat-te-ki-mashi ta ne.

'It's getting dark, isn't it?'

B: moo furu dashi mashi-ta yo, ame ga.
already fall start past rain nm

'(It) already started, rain.'

(18) A: konnaita minna de sensei no uwasabanashi o shi-te-itan da.

'We were joking about our teacher the other day.'

B: omoshirok-katta roo ne.

'Oh, wasn't it fun?'

A: un, demo tochu de hai-te-kichat -tan da, sensei ga.
yes but in the midst come in past teacher nm

'Yes, but (he) just came in, the teacher. (His sudden appearance interrupted us.)'

The degree of acceptability of these RD sentences differ.⁹ However, the relative recoverability of subjects is the same in these sentences because all of them are neutral description sentences. Then it may be predicted that the difference in degree of acceptability is caused by difference in the degree of absolute recoverability (degree of anaphoricity) of each subject. Observation of the discourse in which each sentence is uttered indicates that this prediction is borne out.

(17) and (18) are uttered in a very rich context for recovering their subject NPs, ame 'rain' and sensei 'teacher'. The lexical item sensei is mentioned in the preceding sentence in (18). Though the lexical item ame is not previously mentioned in the discourse, weather is the topic of the conversation in (17). This is a discourse in which lexical items such as rain, snow, fog, wind and etc. are easily recovered. The discourse in which (15) is uttered, on the other hand, is very poor for recovering its subject because Hakone no momiji 'autumn leaves at Hakone' is not a kind of object which can easily be associated with a sightseeing in Japan as opposed to the Mt. Fuji, the Imperial Palace and etc. It is hard to recover the subject from the discourse unless the hearer of the RD sentence is very knowledgeable about Japan. If I replace Hakone no momiji by Fujisan 'Mt. Fuji' which is considered to be a symbol of Japanese scenery, the acceptability of the following RD sentence,

totemo subarashikat-ta desu yo, Fujisan ga.

'(It) was magnificent, Mr. Fuji.'

in the identical discourse as (15) is much higher than (15). Fuyumono no koto 'winter coat' in (16) is more easily recovered from the discourse than Hakone no momiji if this conversation takes place in January or February. The above observation indicates that the acceptability of an RD sentence increases as richness of linguistic and extralinguistic context to recover a deleted lexical item from the first part increases. This implies that the absolute recoverability is not binary but continuous. And it depends on a property or function of the deleted NP in the context.

Though I have observed that there are only three degrees of relative recoverability -- the recoverability of old information, new information where the entire sentence conveys new information and new information where the rest of the sentence conveys old information --, I speculate that the degree of relative recoverability of a lexical item is also continuous. This leads to a hypothesis that :

The degree of acceptability of an RD sentence is a function of the degree of relative and absolute recoverability of the lexical item deleted from the first part of the sentence.

In general, the newer the information that a lexical item conveys, the lower its deletability from the first part of the RD sentence. Similarly, the higher the discourse anaphoricity of the lexical item, the higher the deletability of the lexical item from the first part of the RD sentence.

It has been shown in the above discussion that the acceptability of an RD sentence is sensitive to the functional or pragmatic nature of the sentence. Though I have not discussed how an RD sentence is generated, it has been shown that an acceptability of an RD sentence depends on nature of an NP deleted from the first part. It has also been shown that nature of the NP must be stated in terms of a property or function of the deleted NP, not in terms of syntactic structure.

NOTES

¹Yo is one of sentential particles which are attached at the end of matrix sentences (Uyeno (1971)). Uyeno stated that:

Yo serves to undertone a claim and add the connotation
'I will tell you... '.

²There are two other types of Japanese sentences which have some element following main predicates. One has an adverb after a verb as in:

- (i) John ga France e iku soo you, raigetsu.
nm to go next month

'I heard that John will go to France, next month.'

The other has an NP clause after a main verb as in:

- (ii) John ga it -te-ita yo, Mary ga kekkonsuru to.
nm say be past nm marry comp.

'John said (it), that Mary will get married.'

³A symbol # preceding a sentence indicates that it is unacceptable in a context.

⁴It is clear that we have to distinguish between two different concepts related to old and new information: the concept applied to lexical items, on one hand, and the concept applied to the particular semantic relations which lexical items enter into the given sentence, on the other. Following Kuno, I will use the terms "anaphoric/nonanaphoric" strictly for the former sense, and the terms "old/new information" strictly for the latter sense.

⁵When the predicate represents a state (but not existence) or a habitual-generic action, only the exhaustive listing interpretation is obtained.

⁶Kuno has claimed that there are predictable themes and there are unpredictable themes. He observed that thematic subjects convey new information when new topics are introduced. In these context, whole sentence must convey new information.

⁷The following assertion corresponds to Kuno's Hypothesis 2, 3, and 5 in "Functional Sentence Perspective". (a) Subjects of matrix sentences which convey new information can not be deleted. All instances of apparent missing subjects are instances of deletion of subjects which convey old information. (b) Ga for subject marking in matrix sentences cannot be deleted in informal speech. This means that the subject marking can not be deleted if the subject conveys new information. (c) In embedded clauses, the subject cannot be deleted under identity with the matrix sentence subject if it conveys new information.

⁸I owe these terms to S. Kuno.

⁹One may not agree with judgement of acceptability marked on (15) to (18). However, I hope their judgement on relative acceptability of these sentences coincide with mine.

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THE USE OF THE HIGH RISING CHANGED TONE IN CANTONESE: A SOCIOLINGUISTIC STUDY

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There is a tone change phenomenon in Cantonese which is not conditioned by the tonal environment but is associated with certain special function and meaning. Some words obligatorily undergo tone change and some do optionally. Phonological descriptions of Cantonese often refer to the latter cases as "irregular" or "free variation" while hinting at the correlation between the frequency of tone change and stylistic variation. This paper investigates this correlation by using a sociolinguistic sampling method. Linguistic data of three contextual styles--spontaneous conversation, reading sentences, and word lists--are elicited, recorded, and analysed. It is found that the use of the "optional" high rising changed tone is regularly conditioned by a social variable--style, and that the frequency of occurrence of the high rising changed tone is inversely proportional to the degree of formality of the style.

1.0. Introduction

Traditional description of tones in Cantonese distinguishes between nine or ten tones. A list of the tones with their traditional names and their pitch contours is as follows:

	<u>Ping</u> (Even)	<u>Sheng</u> (Rising)	<u>Qu</u> (Going)	<u>Ru</u> (Entering)
				High Middle
<u>Yin</u> (upper)	↘ or ˥	↗	˥	˥ ˥
	53: 55:	35:	33:	5: 3:
<u>Yang</u> (lower)	˩	↗	˩	˩
	21:	24:	22:	2:

The three ru tones, which refer to syllables ending in p, t, or k, may be identified with other tones in terms of their pitch contours and registers, i.e., high vin-ru with the level variant of vin-ping, middle vin-ru with vin-qu, and yang-ru with yang-qu. Tones in Cantonese can thus be described as having three pitch contours--falling, rising and level--and each having two pitch registers (Chao 1947:24). This results in six tones, which this paper will refer to as high falling (53:), high rising (35:), mid level (33:), low falling (21:), low rising (24:), and low level (22:). The high level tone (55:) is considered here to be an allophonic tone derived by either tone sandhi or by tone change from the high falling tone (as treated by Hashimoto 1972, Kao 1971, and Chao 1947) instead of a phonemic tone (as treated by Zong 1964).

The Romanization used in this paper follows the Yale system as used in *uang* (1970: ix-xv). The tones are notated as follows (taking the syllable *i*, or *sik* in the *ru* tones as an example):

	Level	Rising	Falling
high	sī, sīk	sí	sì
mid	si, sik		
low	sih, sihk	síh	sìh

1.1. The changed tone

Whereas tone sandhi is a change conditioned by the tonal environment, one change in Cantonese is "not affected by its adjacent tones, though it tends to occur in word-final position" (Kao 1975: 86). The tone sandhi phenomenon in Cantonese is described by Hashimoto (1972: 112) as follows: "falling tone becomes a level tone if followed by another tone that begins at the same level, whether the latter is level or falling. Thus: 3 --> 55 / _ 53/55/5 ." Tone change, on the other hand, takes place regardless of its tonal environment, but is associated with certain special function and meaning. Kao (1971: 113) distinguishes between two functions, "affective" and "morphological," which are "often intertwined":

"The former refers to the affective overtones (or stylistic informality) that characterize all changed-tone forms occurring in familiar discourse. In this sense the changed tone expresses a general concept of 'familiarity,' embracing a range of emotional attitudes such as endearment, a diminutive, secondariness, or disrespect. The morphological function involves morphologic structure of words with the changed tone playing a role in semantic or phonetic modification (i.e., derivation or compensation for an omitted morpheme)."

There are two products of tone change: a high rising tone and a high level tone. The great majority of morphemes with a changed tone are derived from those with the high falling tone, low falling tone, low rising tone, and low level tone. A changed tone derived from the high falling tone is almost always high level, and one derived from the other three tones is almost always high rising (Chao 1947: 34-35).

Examples of the "affective function" are:

- (1) 'òhng sàang 'Mr. Wong'
versus A 'òhng⁺³⁵ 'Wong (a familiar form of address).
(A 'òhng⁺³⁵ is pronounced "a wong"---+35 and +55 are used to indicate the high rising changed tone and the high level changed tone respectively.)
- (2) jing mún 'main door'
versus hauh mún 'back door' and wáahng mún⁺³⁵ 'side door'
- (3) gámnihn ~ gámnihn⁺³⁵ 'this year'
bínnihn ~ bínnihn⁺³⁵ 'which year'

An example of the "morphological function" is.

(4) yātgo yātgo -- yātgo⁺³⁵go 'one by one'

1.2. The problem

Since the conditioning for this tone change is unpredictable, "all morphemes which are subject to tone change will have to be specifically marked" in the lexicon (Hashimoto 1972: 94-95). "Moreover, the morphemes which do change fall into two groups: one always undergoes the change while the other sometimes does" (Ibid.: 95). In other words, the tone change rule is considered obligatory for some morphemes (examples 1, 2, and 4 above), and optional for others (example 3)^c. Thus, not only that the morphemes which are subject to tone change have to be marked, they also have to be marked as to whether tone change applies obligatorily or optionally. This problem is further complicated in that "aside from a number of well-established cases, the membership of the two groups [i.e., the obligatory cases and the optional cases] varies with individual speakers" (Ibid.).

In discussing the optional cases, both Hashimoto and Kao allude to the stylistic factor involved. Hashimoto points out that "the use of a changed tone gives a more colloquial and informal style" (1972: 96), while Kao views the problem as a case of "free variation"--i.e., "the occurrence or non-occurrence of a changed tone with a given syllable in the same environment"--which is "a signal of stylistic variation only." She goes on to say that "sometimes, one variant or the other will be typical of a particular speaker of Cantonese, and sometimes both variants will be used by the same speaker, who will use them on different occasions" (1971: 103).

The implication of both Hashimoto's and Kao's descriptions is that the changed tone occurs more frequently in informal styles than in formal styles. This actually contradicts with the notion of "free variation," as the variability involved is not at all "free," being conditioned by a social variable--style. However, this claim, whether implicitly or explicitly stated, has never been tested by any sociolinguistic method. The objective of the present study, then, is to use a sociolinguistic sampling method to investigate this phenomenon of "optional" tone change, and to study the correlation between the frequency of occurrence of the changed tone and stylistic variation.

2.0. The procedure

As noted by Labov, stylistic variation is not erratic but regular, and one approach to discover the system within this variation is by the isolation of different contextual styles (Labov 1972). In order to test the hypothesis that the frequency of occurrence of the changed tone increases as the style becomes more informal and vice versa, the problem at hand is to isolate different contexts that elicit different styles of speech. As Wolfram and Fasold point out, "the essential dimension of stylistic variation in social dialectology relates to the amount of attention paid to speech--the more attention paid, the more formal the style" (1974:84). Accordingly I have

chosen to deal with three different contextual styles--spontaneous conversation, reading sentences, and word lists, each requiring a different level of attention paid to speech (in ascending order), and therefore representing a different point on the continuum of style (ranging from casual to formal).

2.1. Spontaneous conversation

In order to obtain as close to casual speech as possible, I have used a peer group setting. This is possible as all the informants are friends of the interviewer. Six informants, A, B, C, D, E, and F, were recorded at a gathering at B and E's residence. Two informants, G and H, were recorded separately at G's residence, and two more, I and J, were recorded together at I's residence. The most spontaneous and casual conversations were obtained from the first six informants, due to the group gathering situation. To each informant I posed similar questions concerning their linguistic and educational background, their experiences as foreign students, etc.

The main point to note here is that the context was not really a formal interview that would elicit careful speech as defined by Labov (1972). Most of the conversations very quickly moved away from my questions to a variety of topics, and much of the data elicited are in fact comparable to three of the casual contexts defined by Labov, i.e., speech outside the formal interview, speech with a third person, and speech not in direct response to questions.

2.2. Reading sentences

A list of ten sentences were given to each informant (after the conversation) with the instruction that they should say them as they would normally do in everyday discourse. The sentences are written in standard Chinese, which, to a native Cantonese speaker, is strictly a written language and is quite different from his spoken language. Therefore, the activity performed on these sentences was in fact not reading but a certain process of translating a written language into a quite distinct spoken language. For example, when asked to say it as they would normally do in everyday discourse, all informants rendered sentence 3 in the Appendix into something like the following:

Méih leihjó Méigwok géinoih (a)?

However, if they were asked to read sentence 3, it would have been:

Méih lóihliúh Méigwok dōgáu liúh?

What is involved here, then, is a style that is more formal than casual speech, but is less formal than reading in the strict sense. Thirteen morphemes that can optionally undergo tone change, taken from Hashimoto (1972), Kao (1971), and Cheung (1969), were built into the ten sentences, which are listed in the Appendix.

2.3. Word lists

A list of forty-nine words, thirty of which potentially carry the high rising changed tone, were given to the informants to read. Twenty-four of them are listed in Table 3.

2.4. The recording

The entire interviews were tape-recorded on a Sanyo portable cassette-recorder with a built-in condenser microphone. The quality of reproduction is more than adequate for the present study, as the changed tone is very easy to be picked out by auditory judgement alone.

2.5. The informants

There are over a hundred native Cantonese speakers from Hong Kong at the University of Illinois campus. However, given the nature of the hypothesis to be tested--i.e., the use of the changed tone as it relates to style, it does not seem to need a large number of informants, since the population available for sampling is relatively homogeneous in terms of socioeconomic status, geographical origin, age, and education, and can be assumed to share a similar sensitivity to stylistic variations. Of the ten informants studied, nine are university students and one is a recent graduate, now employed (H). Eight are male and two are female (D and I). As for their linguistic background, nine grew up in Hong Kong and one in Canton (A).

3.0. Analysis

All words with a potential changed tone are transcribed from the conversations and are tabulated to show the number of times a certain word is used with or without the changed tone by different speakers (see Table 1). The thirteen words built into the sentences and the word list are tabulated to show the number of changed tones used by different speakers (see Table 2 and Table 3 respectively).

Only twenty-four words from the word list read by the informants are tabulated in Table 3. Nineteen of the original forty-nine were only for testing the distribution of the high falling and high level tones. As expected, the result is very confusing. It seems that most speakers either do not have the high falling tone at all or they do not distinguish between the high falling and the high level tones. It is a problem too complicated to be handled by a limited study as the present one, and I have chosen to limit the study to the high rising changed tone only. Six of the remaining thirty words are not listed in Table 3 because they obligatorily undergo tone change. Of the six, some were included because I was not sure whether they were obligatory cases, and some were included just to make the word list appear less uniform to the informants. Also, in Table 3 the words are grouped according to their original tones, but they were not grouped in any particular order in the list read by the informants.

3.1. Findings and discussion

Table 4 shows the frequency of tone change in three styles for all ten informants. Comparing the percentages of changed tones realized across the three styles, a clear pattern emerges, i.e., the occurrence of the change becomes less frequent as each speaker moves toward the formal end of the style continuum. There are only two exceptions to this. First, informant B has a higher frequency of changed tones in the word list than in the sentences. This, however, can be easily explained. Informants A and B were recorded together, and, when A was reading the word list, B wanted to see the list of sentences in order to "prepare for a better reading." Partly not being aware of the significance of this action and partly wishing to experiment with the situation, I let him look at the sentences, for a few minutes, before it was his turn to read. Apparently this extra attention paid to the sentences has resulted in fewer occurrences of the changed tone, or, in other words, more attention paid to speech has resulted in a more formal style. Secondly, informant F has fewer occurrences of the changed tone in spontaneous conversation than either in reading sentences or word list. This seems harder to explain. But, actually it points to a problem involved in the spontaneous conversation: not enough words with potential changed tones were elicited. On the whole, the frequency percentage figures in spontaneous conversation is much less reliable than those in the other two styles (see Table 4). In any case, the gradual decrease of the frequency of tone change as the style moves from casual to formal is the most important point, and not the actual frequency percentages. The composite frequency percentage of all ten informants is perhaps more significant than the individual ones: a decrease from 74% to 39% to 24% as the formal end of the style continuum is approached.

Looking at individual words as used by different speakers across different styles, a pattern also emerges to confirm the hypothesis: if a word is used with the changed tone in a less formal style, it may be used with or without the changed tone in a more formal style by the same speaker; but if it is used without the changed tone in a less formal style, it is used also without the changed tone in a more formal style by the same speaker (see Table 5). Even though the data elicited limits the comparison to the same word uttered by the same speaker across only two styles, more complete data will most certainly show that the use of the changed tone in a specific word by a specific individual follows one of the four patterns below:

	conversation	sentences	word list	
(a)	+	+	+	
(b)	+	+	-	(+ indicates a tone change and - indicates none)
(c)	+	-	-	
(d)	-	-	-	

Exceptions to these four patterns are few. Out of eighty cases, each case being a specific word uttered by a specific speaker across two different styles, there are only eight exceptions. Of the eight exceptions, four belong to informant B, and the idiosyncratic performance of B has been explained above.

3.2. Other observations

The words with potential changed tones that are most frequently used in the spontaneous conversations are Yingmahn, 'English,' and Jungmahn, 'Chinese.' Almost all, with few exceptions, are pronounced with the high rising changed tone. However, in Yingmahn hohkhaauh, 'English school,' Jungmahn hohkhaauh, 'Chinese school,' Yingmahn jungohk, 'English middle school,' etc., mahn is never pronounced with the changed tone. This confirms the observation that Hashimoto makes: "in many cases, the same morpheme carries the changed tone when it occurs in a final position of a combination but not otherwise" (1972:126). The difference between gammahn, 'this year,' in sentence 1 and mihngrihn (or cheutnihn, or daihyihnihn), 'next year,' in sentence 2 also supports this. Nihn in sentence 2 is in a sentence-final position, and therefore nine out of ten informants used the changed tone. In sentence 1, however, nihn is embedded in gammahn syuga, 'this summer,' and as a result, five out of the nine informants (who used the changed tone in sentence 2) pronounced nihn in the original tone. Therefore it seems apparent that there exists a variable constraint that favors the changed tone when it occurs at the end of a "combination." Unfortunately, due to the lack of data for more comparisons of the previous sort, this problem cannot be dealt with any further.

Another problem that cannot be solved in the present paper is the distribution of the changed tone among individual tones. Various linguists have made conflicting claims that certain tones undergo tone change more frequently than others (Hashimoto 1972:96-97, Kao 1971:111, Whitaker 1956:199, Chao 1947:34). These claims deal with all cases of tone change, including both words that obligatorily undergo tone change and those that optionally do so. As the present study concerns only with the "optional" cases, the task becomes doubly difficult, since there are very few words in some tones, e.g. low rising tone, that "optionally" undergo tone change. It becomes impossible to compare statistically how words in different tones are realized as changed tones when there are eleven words in the low falling tone and only one in the low rising tone, as shown in Table 3.

An interesting result of this study is that tone change is shown to be a productive process in casual speech. It can apply even to nativized English words such as enjihn, 'engineering,' sammah, 'summer,' etc. In these cases, clearly tone change applies only in informal situations.

3.3. Evaluation

As mentioned in 3.1., not enough words with potential changed tones were elicited in the spontaneous conversation. This is a difficult problem, as there is a limited number of words, mostly nouns, that can "optionally" undergo tone change. If this study were to be done again, perhaps more useful data can be obtained by asking more questions that require answers using these words. (There is, however, the danger that the conversation would become more formal if more leading questions were asked.) Also, in order to examine the variable constraints--one in terms of the original tone category and one in terms of the position of the syllable carrying the potential changed tone, the sentences and word list have to be constructed in such a way that there

will be sufficient number of morphemes in each tone category, as well as various combinations of morphemes in which the one carrying the "optional" tone change appears in different positions. Both of these are difficult problems, as mentioned in 3.2., but can nonetheless be improved to a certain extent.

Also, due to the relative homogeneity of the informants, it is not clear what social variables other than style condition the frequency of tone change. Labov (1971) considers the following to be the chief factors for language variation: regional differences, socioeconomic stratification, ethnic differentiation, sex differences, and age levels. In this study, the sample was too small to show correlation, if any, between sex differences (D and I compared to the rest) and regional differences (A compared to the rest) and the frequency of tone change. At least four of the five variables mentioned cannot be adequately studied unless there is a larger and more heterogeneous community to be sampled. If this study were to be repeated in this community, sex differences is probably the only social variable that can be further investigated.

4.0. Conclusion

Through the use of a sociolinguistic sampling method, this study confirms the hypothesis that the frequency of occurrence of the changed tone, or more specifically, the high rising changed tone, in Cantonese is inversely proportional to the degree of formality of the style. The use of the changed tone increases as the context becomes less formal, and decreases as the context becomes more formal. On a more general level, this study has shown that the classical dichotomy between rule-governed alternations and "free variations" cannot adequately explain the tone change phenomenon in Cantonese. What is needed here is a sociolinguistic theory that treats the heterogeneity of the language of everyday life as the norm, and deals with variability as regular and being governed by the social context (Labov 1971a).

NOTES

I wish to thank Professors Wayne Dickerson, Chin-chuan Cheng, and Chin-W. Kim for their valuable comments on this paper.

¹Because of this distribution pattern, Kao (1971) treats them as a single changed tone that takes on two different shapes depending on the tonal shape of the original tone form from which it is derived. There is very little evidence otherwise that supports the treatment of a single changed tone, as the high rising changed tone and the high level changed tone each takes on different functions. For example, the high level changed tone can change the meaning of a morpheme into its opposite:

chəuhŋ 'long' --> chəuhŋ⁵⁵ 'short'

Furthermore, some morphemes can take on both changed tones with the same or different meanings:

maahn		'slow'	muih	'younger sister'
maahnmaahn	+35	'slowly'	muih+35	'younger sister'
maahnmaahn	+55	'slowly'	muih+55	'girl, maid'

Therefore, for the purpose of this study, the two changed tones are treated as distinct from each other.

²In Cantonese text-books for second language learners, morphemes that optionally undergo tone change are often shown as having two alternate forms. For instance, the alternate forms in example 3 (in 1.1.) can be found in Huang (1973: 135, 368) and in Boyle (1970: 28), but no explanation is given for the existence of the alternate forms. This is clearly inadequate for the students of Cantonese, and it is hoped that this study will be of some pedagogical use.

³Hashimoto comments that "when morphemes of the Yin-Ping (i.e., high falling) tone undergo this [tone] change, the line between obligatory cases and optional cases is not so clear--a lot depends on individual speakers" (1972: 97). The line is not so clear for the high rising changed tone either, but apparently it is much less clear for the high level changed tone.

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TABLE 1
Spontaneous conversation

Words with potential changed tone		Informants									
		A	B	C	D	E	F	G	H	I	J
Yǐngmǎhn(+)	'English'	1+	1+	3+	2+	1- 5+			5+	1- 3+	1+
Jǔngmǎhn(+)	'Chinese'		1+	1+	1+	4+	1- 1+	1+	2+	1+	
Yǐngmǎhn(+)	hohkhaauh 'English school, jǔnghohk English middle -syǎyǔn school'		1-	1-			1-	1-	1-		
Jǔngmǎhn(+)	hohkhaauh 'Chinese school, jǔnghohk middle school, siuhohk grade school'		1-	2-			2-		1-		
Jǔng Yǐng mǎhn(+)	'Chinese and English'			1+							
Méihmǎhn(+)	'American language'			1-							
gaautòhng(+)	'church'	1-	1+					1-	1-		
gōjahnsǐh(+)	'at that time; when'										
yauhjahnsǐh(+)	'sometimes'					1-		2-	1-	1-	
sǐmpòuh(+)	'simple'	1+									
ēnjǐhn(+)	'engineering'		1+								
hohktòhng(+)	'school'		1-								
siungòh(+)	'roast goose'						1-				
yehmaǎhn(+)	'night'							1+			
líhngsih(+)	'consul'							2+			
āammǐh(+)	'army'									2+	
Tone change		2	4	5	3	9	1	4	9	4	1
No tone change		1	3	4	1	1	5	4	4	2	1

Notes: 1. The number indicates the number of times a particular word is used in the conversation.

2. -: pronounced with the original tone;

+: pronounced with the high rising changed tone;

(+): marks the syllable that can undergo tone change.

TABLE 2
Reading sentences

Words with potential changed tone	Informants									
	A	B	C	D	E	F	G	H	I	J
1. gāmnihn ⁽⁺⁾ 'this year'	-	-	-	-	+	+	-	-	+	+
2. géisih ⁽⁺⁾ 'when(?)'	-	-	-	-	-	0	-	-	0	0
mihngnihn ⁽⁺⁾ , (ckeūtnihn ⁽⁺⁾ , daihyihnihn ⁽⁺⁾) 'next year'	+	+	+	+	+	+	+	-	+	+
3. géinoih ⁽⁺⁾ 'how long'	-	-	-	-	-	-	-	-	-	-
4. yatchaih ⁽⁺⁾ 'together'	-	-	-	-	-	-	-	-	-	-
5. peihpàh ⁽⁺⁾ 'pipa'	-	-	+	+	+	+	+	+	+	-
sāmyihnihn ⁽⁺⁾ 'sanxian'	-	-	-	-	-	-	-	-	-	-
6. siungap ⁽⁺⁾ 'roast duck'	+	-	-	+	-	+	-	+	-	-
siungòh ⁽⁺⁾ 'roast goose'	-	+	+	+	+	-	+	+	+	+
7. húngjeuk ⁽⁺⁾ 'peacock'	+	-	-	-	+	-	-	-	-	-
8. baahkgaap ⁽⁺⁾ 'pigeon'	+	-	+	+	+	+	+	+	+	-
9. dūnchihnihn ⁽⁺⁾ , sāibihihn ⁽⁺⁾ 'east-side, west-side'	+	-	+	-	-	-	-	-	0	0
10. yātjahn ⁽⁺⁾ , yātjahn ⁽⁺⁾ gāan 'a short while'	-	+	+	-	-	-	-	-	+	-
Tone change	7	3	6	5	6	5	4	4	6	3
No tone change	7	10	7	8	7	7	9	9	5	8

Notes: 1. 0 indicates that the informant has substituted another word that does not undergo tone change.

2. Informant A in sentence 1 used sāmmeah⁽⁺⁾ instead of syiŋa. He therefore has one additional potential changed tone, totalling fourteen of them.

TABLE 3, cont.

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>
lihngsih ⁽⁺⁾ 'consul'	+	+	-	+	+	+	-	+	-	-
jimuih ⁽⁺⁾ 'sisters'	-	-	-	-	-	+	-	-	-	-
bunye ⁽⁺⁾ 'midnight'	-	-	-	-	-	-	-	+	+	+
jeunggahn ⁽⁺⁾ 'about to'	-	-	-	-	-	-	-	-	-	-
bundeih ⁽⁺⁾ 'local'	-	-	-	-	-	-	-	-	-	-
chaahk ⁽⁺⁾ 'thief'	-	+	-	+	-	+	-	-	-	+
Tone change	6	8	4	7	6	9	2	3	6	6
No tone change	18	16	20	17	18	15	22	21	18	18

TABLE 4
Frequency of tone change across three styles

Informants	Spontaneous conversation	Reading sentences	Word list
A	67%	50%	25%
B	57%	23%	33%
C	50%	46%	17%
D	75%	38%	29%
E	90%	46%	25%
F	17%	42%	38%
G	50%	31%	8%
H	70%	31%	13%
I	67%	55%	25%
J	100%	27%	25%
Total number of cases with tone change	42	29	57
Total number of cases without tone change	15	77	183
Composite percentage	74%	39%	24%

TABLE 5

Words used accross different styles

<u>sìungaaap</u>			<u>húngjeuk</u>			<u>baahkraap</u>			<u>sìunnòh</u>		
Inf.	RS	WL	Inf.	RS	WL	Inf.	RS	WL	Inf.	SC	RS
A	+	+	A	+	+	A	+	+	F	-	-
B	-	+	B	-	+	B	-	+			
C	-	-	C	-	-	C	+	-			
D	+	+	D	-	+	D	+	+			
E	-	-	E	+	+	E	+	+			
F	+	-	F	-	-	F	+	+			
G	-	+	G	-	-	G	+	-			
H	+	-	H	-	-	H	+	-			
I	-	-	I	-	-	I	+	+			
J	-	-	J	-	-	J	-	+			

<u>Peihpòh</u>			<u>gáun</u>			<u>yātong</u>			<u>zéisih</u>		
Inf.	RS	WL	Inf.	RS	WL	Inf.	RS	WL	Inf.	RS	WL
A	-	-	A	-	-	A	-	-	A	-	-
B	-	+	B	-	-	B	-	-	B	-	-
C	+	-	C	-	-	C	-	-	C	-	-
D	+	+	D	-	-	D	-	-	D	-	-
E	+	+	E	+	-	E	-	-	E	-	-
F	+	+	F	+	+	F	-	-	F	-	-
G	+	+	G	-	-	G	-	-	G	-	-
H	+	+	H	-	-	H	-	-	H	-	-
I	+	+	I	+	+	I	-	-			
J	-	-	J	+	+	J	-	-			

<u>Yāunghān</u>			<u>gáunghān</u>		
Inf.	SC	WL	Inf.	SC	WL
A	+	+	A	-	+
B	+	+	B	+	+
C	+	+	C	-	-
D	+	+	D	-	-
E	+	-			
H	+	-			
I	+	+			
J	+	-			

Note: The exceptions are circled.

APPENDIX

The following are the ten sentences given to the informants, and their English translations. The underlined characters are the ones that require words with potential changed tones in Cantonese.

1. 你今年暑假打算做什么？
What are you planning to do this summer?
2. 你什么时候去？是不是明年？
When are you going? Is it next year?
3. 你来了美国多久了？
How long have you been in the U.S.?
4. 我跟他一起去，你们都一起去吧？
I'm going along with him. Why don't you come along?
5. 你喜欢听中国音乐吗？你喜欢琵琶、二胡还是三弦？
Do you like to listen to Chinese music? Do you like pipa, erhu, or sanxian?
6. 我觉得烤鸭比炸鸡好吃。
I think roast duck is better tasting than roast goose.
7. 你有没有见过孔雀开屏？
Have you ever seen a peacock showing its feathers?
8. 这里有很多白鸽，但是颜色不太白。
There are a lot of pigeons here, but their color isn't too white.
9. 你的朋友住在campus的东边还是西边？
Does your friend live at the east-side or the west-side of the campus?
10. 等一会就有汤喝了。
We will have soup in a short while.

RESTRICTIVE RELATIVE CLAUSES IN BAHASA MALAYSIA¹

Chiang Kee Yeoh

In this paper, first, by using Keenan and Chung's own examples I will show that, in Bahasa Malaysia or Bahasa Indonesia, the syntactic direct object of a sentence or a clause, in fact, fails to undergo a relativization rule directly, and that the failure of direct relativization of the syntactic direct object contradicts the claims which have been made in Keenan(1972), Chung(1976a) and Keenan & Comrie(1977). Secondly, I will illustrate that only two NP positions, that is, those of subject NP and Poss-NP, of Keenan and Comrie's Accessibility Hierarchy(AH) can be relativized directly. The other NPs lying in the strategy gaps between the subject NP and the Poss-NP on the AH are relativizable only after they have been systematically promoted to an accessible position. Since only the subject NP and the Poss-NP can be relativized directly, I would conclude that Bahasa Malaysia or Bahasa Indonesia not only poses a problem for but also presents a good counterexample to Keenan and Comrie's AH as far as direct relativizability of an NP is concerned, for direct relativizability of a low NP position, in this case, does not entail direct relativizability of all higher NP positions on the AH.

1.0 Introduction.

From all the works written on Bahasa Malaysia² and Bahasa Indonesia that I have managed to gather and survey to date, I have discovered that no satisfactory work has been written about Bahasa Malaysia restrictive relative clauses. Some works such as Chung(1976a & 1976b), Keenan(1972) and Keenan & Comrie(1977) have dealt very superficially on restrictive relative clauses in Bahasa Malaysia and Bahasa Indonesia.

In this paper, therefore, I shall attempt to give a fuller as well as more satisfactory account of the restrictive relative clauses in Bahasa Malaysia. First, following Keenan & Comrie's Accessibility Hierarchy I shall scrutinize to see if all the six NP positions on the Accessibility Hierarchy are relativizable in Bahasa Malaysia, and then, using the Accessibility Hierarchy model as a basis, I shall proceed to determine if contemporary Bahasa Malaysia actually violates the Basic Constraint for Western Malayo-Polynesian languages as it has been claimed in Keenan (1972), and finally, to determine whether or not the Hierarchy Constraints proposed by Keenan & Comrie are consistent with relativization rules in Bahasa Malaysia.

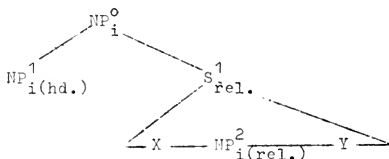
2.0 Relative Clause.

According to Andrews a relative clause can be roughly described as a subordinate clause which modifies an NP, and does so by virtue of the fact that it contains in its deep structure an NP which is coreferential to the modified NP.

Following Andrews(1972) I will refer to the modified NP as $NP_{h(ea)d}$, the relative clause as $S_{rel(ative)}$, the NP which is coreferential to the $NP_{hd.}$ which is within the relative clause as $NP_{rel(ative)}$, and the sentence which is the highest sentence dominating both the $NP_{hd.}$ and $S_{rel.}$ as $S_{mat(rix)}$.

Bahasa Malaysia is a S-V-O language; and like any other S-V-O language, such as English, the relative clause or $S_{rel.}$ follows $NP_{hd.}$. This type of relative clause construction is known as retrospective relative.

Roughly, the structure of a retro-relative looks somewhat like the diagram below:



2.1 Restrictive Relative Clause.

A restrictive relative clause is a relative that is derived from an embedded of the type $NP \rightarrow NP + S$ (e.g. The house that Ali built was very strong), as opposed to a non-restrictive relative clause that is derived from a conjoined sentence: $S_1 + S_2 \rightarrow NP + V + NP - S_2$ (e.g. 'Ali built a house, and it was very strong.' \rightarrow 'Ali built a house, which was very strong.').

Generally, a restrictive relative clause in Bahasa Malaysia is marked by the relative marker yang 'who/which/that', for example:

- (1) Buku yang di atas meja itu buku saya.
book REL. on top table the book I

"The book that is on the table is my book."

- (2) Guru yang memukul(meng+pukul) Ali itu guru saya.
teacher REL. Act.hit Ali the teacher I

"The teacher who hit Ali is my teacher."

Besides yang 'relative marker' which Keenan & Comrie(1977) have claimed to be the only invariable particle used as the relative pronoun in Bahasa Malaysia, there are, in fact, other relative pronouns or markers such as, tempat 'place', ketika 'when', teman 'companion', etc., which cannot be replaced by yang and which I shall discuss in greater detail in section 3.4 of this paper.

3.0 Relativization in Bahasa Malaysia.

In Bahasa Malaysia, a relative clause is formed by the postnominal strategy, that is, the NP_{hd} always occurs to the left of the restricting clause, and this strategy is clearly illustrated in (1) and (2). In what follows I shall proceed step by step in accordance with Keenan & Comrie's Accessibility Hierarchy to examine various NP positions which are accessible to relativization. Keenan and Comrie's Accessibility Hierarchy is made up of six English NP positions which can be relativized directly, and is stated as follows:

Accessibility Hierarchy
SU > DO > IO > OBL > GEN > OCOMP

Following the hierarchy stated above, the NP position that occurs to the extreme left is the easiest position to relativize, while the NP that appears to the extreme right is the hardest position to relativize; and any NP position occurring in between may be the cut-off point for any primary strategy of any particular language. In the following section I would determine which NP position on the Accessibility Hierarchy is the cut-off point for Bahasa Malaysia.

3.1 Subject Relativization.

As subject NP is the starting point of the Accessibility Hierarchy I would now look into subject relativization in Bahasa Malaysia. By applying a relativization rule to the subject NPs of S_{rel} of (3) - (8) below we would derive the restrictive relative clauses of (3') - (8'):

- (3) Kawan saya guru.
friend I teacher

"My friend is a teacher."

- (4) Guru itu pandai.
teacher the clever

"The teacher is clever."

- (5) Gadis itu duduk di atas bangku.
lady the sit on top bench

"The lady sat on a bench."

- (6) Air sungai itu mengalir perlahan-lahan.
water river the Act.-flow slow slow

"The water of the river flows slowly."

- (7) Kawan saya membaca buku.
friend I Act.-read book

"My friend read a book."

- (8) Perempuan itu membasuh kain baju.
woman the Act.-wash cloth shirt

"The woman washed clothes."

- (3') Kawan saya yang guru itu tinggal di Malaysia.
friend I REL. teacher that live in Malaysia

"That friend of mine who is a teacher lives in Malaysia."

- (4') Guru yang pandai itu datang dari Singapura.
teacher REL. clever the come from Singapore

"The teacher who is clever comes from Singapore."

- (5') Gadis yang duduk di atas bangku itu kakak Ali.
lady REL. sit on top bench the elder sister Ali

"The lady who sat on the bench is Ali's elder sister."

- (6') Air sungai yang mengalir perlahan-lahan itu kotor.
water river REL. Act.-flow slow slow the dirty

"The water of the river that flows slowly is dirty."

- (7') Kawan saya yang membaca buku itu telah ditangkap.
friend I REL. Act-read book the Perf. Pass-arrest

"My friend who read the book had been arrested."

- (8') Perempuan yang membasuh kain baju itu perempuan Melayu.
woman REL. Act.-wash cloth shirt the woman Malay

"The woman who washed clothes was a Malay woman."

Constructions (3') - (8') strongly support the claim that in Bahasa Malaysia an NP_{rel.} which is coreferential to NP_{hd.} and which is in the subject position of a S_{rel.} can be relativized. They also point to the fact that one strategy of subject relativization in Bahasa Malaysia is to replace the coreferential NP_{rel.} by the relative marker yang which is more or less equivalent to English pronoun who, which or that.

3.2 Direct Object Relativization.

Having shown that subject NP of a S_{rel.} can be relativized, the next thing, following the order of NP positions^{rel.} in the Accessibility Hierarchy, that we ought to do is to find out if the direct object of a S_{rel.} is relativizable in Bahasa Malaysia. In some works, especially Keenan(1972), Keenan & Comrie(1977) and Chung (1976a & 1976b), it has been claimed that it is possible to directly relativize the direct object of a S_{rel.} in both Bahasa Malaysia(Malay) and Bahasa Indonesia. The Bahasa Malaysia and Indonesian examples which they have used to support their claim are :

- (9) Ali bunuh ayam yang Aminah sedang memakan³
 Ali kill chicken REL. Aminah Prog. Act.-eat

"Ali killed the chicken which Aminah is eating."

(Keenan 1972:184; Keenan & Comrie 1977: 71)

- (10) Ikan yang saya masak untuk Ali tidak enak rasanya.⁴
 fish REL. I cook for Ali not good taste its

"The fish that I cooked for Ali didn't taste good."

(Chung 1976a: 50)

First, let us examine sentence (9), that is, Keenan & Comrie's example, to see if it is true that direct object of the underlined S_{rel} is relativizable. As a fluent speaker of Bahasa Malaysia I would not hesitate to rule it out totally; and my informants who are native speakers of Bahasa Malaysia have also judged sentence (9) as odd and ungrammatical. In short, I would say that no competent Bahasa Malaysia would accept (9) as a good grammatical sentence. To show that (9) is an ungrammatical sentence, perhaps, it might be better for me to make use of Keenan's other example which is structurally similar to (9) and is as follows:

- (11) *Aminah membasoh baju2 yang Ali tidak membasoh.

Aminah Act.-wash clothes REL. Ali not Act.-wash

"Aminah is washing the clothes that Ali isn't washing."

(Keenan 1972: 183)

By comparing the structure of the underlined S_{rel} of (11) to that of (9) we at once notice that there is total structural similarity between (9) and (11). Now, if Keenan and Comrie's claim that the direct object of the underlined S_{rel} of (9), that is, ayam 'chicken' can be relativized is correct, then I see no reason why the direct object of the underlined S_{rel} of (11), that is, baju2 'clothes', fails to undergo relativization since the S_{rel} of (9) and (11) are structurally similar. (11) is indeed a good counterexample, and there seems to be a serious contradiction in Keenan and Comrie's work.

Before refuting Keenan & Comrie's claim, it might be worthwhile to first examine the example in Chung(1976a), that is, sentence (10). Grammatically, sentence (10) is perfectly correct. But what I would like to point out is that the underlined S_{rel} of (10) is actually not an active but rather a quasi-passive sentence, and therefore, the NP_{rel} is not the current direct object of S_{rel} , but rather the current or the derived subject of S_{rel} on which passivization has operated at an earlier stage. The fact that the verb of the S_{rel} of (10) is without the prefix /meng+⁵/ and that saya 'I' occurs immediately to the left of the

prefixless verb to form an inseparable unit⁶ is a good indication of the quasi-passiveness of the $S_{rel.}$ of (10) which is compatible with (12b) below:

(12)a. Saya membaca buku ini. (Active)

I Act.-read book this

"I read this book."

b. Buku ini saya baca. OR Saya baca buku ini?⁷ (Q-Passive)
book this I read

"This book is read by me."

Thus, the NP_{rel.} of (10) is, in fact, the current or derived subject (ex-direct object) of the $S_{rel.}$ and not the syntactic direct object of the $S_{rel.}$ of (10) as has been claimed in Chung (1976a).

Now, to refute Keenan & Comrie and Chung's claim that the syntactic direct object of a $S_{rel.}$ can be relativized directly, I would like to cite some other examples which demonstrate that direct relativization of current direct object is not permissible in Bahasa Malaysia:

(13)a. $\frac{\text{NP}}{\text{hd.}}$ kawan saya $\frac{\text{S}_{rel.}}$ Ali memukul kawan saya $\frac{\text{REL.}}$ friend I Ali Act.-hit friend I

b. * $\frac{\text{NP}}{\text{hd.}}$ kawan saya $\frac{\text{S}_{rel.}}$ yang Ali memukul $\frac{\text{REL.}}$ friend I REL. Ali Act.-hit

"My friend who(m) Ali hit"

c. $\frac{\text{NP}}{\text{hd.}}$ kawan saya $\frac{\text{S}_{rel.}}$ yang dipukul (oleh) Ali $\frac{\text{REL.}}$ friend I REL. Pass.-hit (by) Ali

"My friend who was hit by Ali"

(14)a. $\frac{\text{NP}}{\text{hd.}}$ buku $\frac{\text{S}_{rel.}}$ saya akan membaca buku itu $\frac{\text{REL.}}$ itu $\frac{\text{REL.}}$ book I Fut. Act.-read book the the

b. * $\frac{\text{NP}}{\text{hd.}}$ buku $\frac{\text{S}_{rel.}}$ yang saya akan membaca $\frac{\text{REL.}}$ itu $\frac{\text{REL.}}$ book REL. I Fut. Act.-read the

"The book that I will read....."

c. $\frac{\text{NP}}{\text{hd.}}$ buku $\frac{\text{S}_{rel.}}$ yang akan saya baca $\frac{\text{REL.}}$ itu $\frac{\text{REL.}}$ book REL. Fut. I read the

"The book that will be read by me"

The ungrammaticality of constructions (13b) and (14b) further suggests that so long as the NP_{rel.} is in the direct object position it cannot be relativized. However, we have seen that in (10), (13c) and (14c) the underlying direct object can be relativized, that is, only after we have applied the passive rule to promote it to a derived subject position whence it can be relativized. So, in other words, we need two rules to derive constructions like (10), (13c) and (14c), and these two rules, passivization and relativization, have to be ordered in the following manner:

1. Passivization
2. Relativization

3.3 Indirect Object Relativization.

Keenan and Comrie have also attempted to show that relativization rule can apply directly to the indirect object of a S_{rel.}, and their Malay (Bahasa Malaysia) example is as follows:

(15) Perempuan kepada siapa Ali beri ubi kentang itu
 The woman to who Ali give potato the
 ... "The woman to whom Ali give the potato"

(Keenan & Comrie 1977: 71)

To us (my informants and me) construction (15) sounds very strange and foreign; and it is, in fact, not incorrect for us to say that (15) is a direct translation of an English construction. Therefore, it is not an acceptable construction in Bahasa Malaysia.

Like the direct object, the indirect object of a $S_{rel.}$ can only be indirectly relativized, that is, after it has been advanced a subject position of a $S_{rel.}$ Thus, the correct version of (15) should be (15') below:

(15') Perempuan yang diberi ubi kentang oleh Ali
 woman REL. Pass-give potato by Ali

"The woman who was given the potato by Ali

Other examples showing that direct relativization of the indirect of a S_{rel} is always blocked are :

(16)a. $\overline{\text{guru saya}} \overline{\text{orang itu mengirim buku kepada guru saya}}$
 NP_{hd.} S_{rel.}

b. *[guru saya] [yang] orang itu mengirim buku kepada []
 NP S
 hd. rel.
 teacher I REL. person the Act.-send book to

"My teacher who the man sent a book to"

- (16)c. * $\begin{array}{c} \text{guru saya} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{kepadanya} \\ \text{S} \\ \text{rel.} \end{array} \text{orang itu mengirim buku} _ _$
 teacher I to him/her person the Act-send book
 "My teacher to whom the man sent a book....."
- (17)a. $\begin{array}{c} \text{orang itu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{saya akan membeli buku untuk} \\ \text{S} \\ \text{rel.} \end{array} \text{orang itu} _ _$
 person the I Fut. Act.-buy book for person the
- b. * $\begin{array}{c} \text{orang itu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{yang} \\ \text{S} \\ \text{rel.} \end{array} \text{saya akan membeli buku untuk} _ _$
 person the REL. I Fut. Act.-buy book for
 "The man who I will buy a book for"
- c. * $\begin{array}{c} \text{orang itu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{untuknya} \\ \text{S} \\ \text{rel.} \end{array} \text{saya akan membeli buku} _ _$
 person the for him I Fut. Act.-buy book
 "The man for whom I will buy a book"

So, in order to make the indirect object of a $S_{rel.}$ accessible to relativization we have to advance it to a subject position by a Dative rule and a passive rule, for it is only the subject position where relativization is operable in Bahasa Malaysia.

By applying Dative rule to the $Ss_{rel.}$ of (16a) and (17a) we obtain (18) and (19) below:

- (18) $\begin{array}{c} \text{guru saya} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{orang itu mengirimi} \\ \text{S} \\ \text{rel.} \end{array} \text{guru saya buku} _ _$
 teacher I person the Act.-send-Dir. teacher I book
 " $\begin{array}{c} \text{my teacher} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{the man sent} \\ \text{S} \\ \text{rel.} \end{array} \text{my teacher a book} _ _$ "
- (19) $\begin{array}{c} \text{orang itu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{saya akan membelikan} \\ \text{S} \\ \text{rel.} \end{array} \text{orang itu buku} _ _$
 person the I Fut. Act.-buy-Ben. person the book
 " $\begin{array}{c} \text{the man} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{I will buy} \\ \text{S} \\ \text{rel.} \end{array} \text{the man a book} _ _$ "

$Ss_{rel.}$ of (18) and (19) reveal that Dative rule can only promote the underlying indirect objects to a direct object position, a position which is still inaccessible to relativization in Bahasa Malaysia. So, the Passive rule has to apply to the newly created direct objects(ex-indirect objects) of $Ss_{rel.}$ of (18) and (19) so as to advance them to a subject position.

On applying Passive rule to the $Ss_{rel.}$ of (18) and (19) we derive (20) and (21):

- (20) $\begin{array}{c} \text{Guru saya} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{Guru saya} \\ \text{S} \\ \text{rel.} \end{array} \text{dikirimimi buku oleh orang itu} \text{]] }$
 teacher I teacher I Pass.-send-Dir. book person the
 " $\begin{array}{c} \text{my teacher} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{my teacher} \\ \text{S} \\ \text{rel.} \end{array} \text{was sent a book by the man} \text{]] } "$
- (21) $\begin{array}{c} \text{orang itu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{orang itu} \\ \text{S} \\ \text{rel.} \end{array} \text{akan saya belikan buku} \text{]] }$
 person the person the Fut. I buy-Ben. book
 " $\begin{array}{c} \text{the man} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{the man} \\ \text{S} \\ \text{rel.} \end{array} \text{will be bought a book by me} \text{]] } "$

Once the NPs_{rel.}, that is, the underlying indirect objects of Ss_{rel.} have been systematically advanced to the subject position of S_{rel.}, as seen in (20) and (21) above, relativization can now apply directly to them. As a result of relativization of the NPs_{rel.} of (20) and (21), (20') and (21') are derived:

- (20') $\begin{array}{c} \text{Guru saya} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{yang} \\ \text{S} \\ \text{rel.} \end{array} \text{dikirimimi buku oleh orang itu} \text{] ...] }$
 teacher I REL. Pass.-send-Dir. book by person the
 "My teacher who was sent a book by the man"
- (21') $\begin{array}{c} \text{orang itu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{yang} \\ \text{S} \\ \text{rel.} \end{array} \text{akan saya belikan buku} \text{] ...] }$
 person the REL. Fut. I buy-Ben. book
 "The man who will be bought a book by me"

At this point it appears that Bahasa Malaysia does not, in any way, violate the Basic Constraint proposed by Keenan for Malagasy because it is only the subject NP of a clause that can be relativized.

It might, however, be too early to warrant any decision with regard to whether or not Bahasa Malaysia violates the Malagasy Basic Constraint, for there are still other NP positions to be examined, that is, oblique NP, Poss-NP and object of comparison.

3.4 Oblique NP Relativization.

Under this heading locative and temporal NPs, which Keenan and Comrie refer to as having more adverbial function, will also be scrutinized as they are considered relevant to the discussion of relativization of oblique NPs.

In my data that I have so far gathered, I have discovered that locative, temporal and even comitative NPs can be relativized directly, for example:

prefix is added to the verb stem, the stress falls on the prefix. The examples in (4)-(7) illustrate.

Imperfective	Perfective
4a. tor sra skunḏāla Tor Sra pinched Tor was pinching Sra.	b. tor sra wḏskunḏala Tor Sra pinched Tor pinched Sra
5a. tor sra tḏxnawāla Tor Sra tickled Tor was tickling Sra.	b. tor sra wḏtḏxnawāla Tor Sra tickled Tor tickled Sra.
6a. tor gaḏedḏ Tor danced Tor was dancing.	b. tor wḏgaḏedḏ Tor danced Tor danced.
7a. tor ḡgaḏedḏ Tor spoke Tor was speaking.	b. tor wḏḡgaḏedḏ Tor spoke Tor spoke.

Now let us look at clitic placement when on the surface nothing precedes a Class-I verb in the sentence. If the aspect is imperfective, the clitics in such instances are placed after the verb, which is stressed on the ultimate or penultimate. The examples in (8) illustrate. The clitics are underlined.

- 8a. mačawḏle ye
kissed he
He was kissing you.
- b. mačawf de
kiss you
He is kissing you.
- c. tḏxnawāla me
tickled I
I was tickling her.
- d. tḏxnawf me
tickles me
She is tickling me.

If the aspect is perfective, the clitics are placed after the perfective prefix, which is stressed. The examples in (9) illustrate. The clitics are underlined.

- 9a. wḏ de³ riṭḏ
you insult
You insulted him.

- b. wǝ́ de peʒǝndǝ
 you recognized
 You recognized him.
- c. wú ba de ʒawrawi
 will you bother
 He will bother you.
- d. we ba de guri
 will you see
 He will see you.

Thus in sentences with a Class-I verb not preceded by anything, "second position" means in the imperfective the position after the verb, which is stressed on the ultimate or penultimate, and in the perfective the position after the perfective prefix, which bears stress.

There are a number of Class-I verbs which in the imperfective may be stressed either initially or finally, the two being optional variants. (The perfective, the same as all other Class-I verbs, adds the perfective prefix wǝ-, which bears stress.) This subgroup of Class-I verbs includes a small number of verbs whose roots start with a consonant and a number of verbs whose roots start with /a-/. For convenience, I will call the former "consonant-initial stress shift" Class-I verbs and the latter simply "/a/-initial" verbs, since they constitute all the /a/-initial verbs in the language. As far as clitic placement is concerned, the consonant-initial stress shift verbs and the /a/-initial verbs behave differently.

In sentences where on the surface nothing precedes one of these consonant-initial verbs, the clitics are in the imperfective always placed after the verb, regardless of where on the verb the stress is located. Examples are given in (10) and (11).

- 10a. sǝtǝm ye
 keep it
 I keep it.
- b. sǝtǝm ye
 keep it
 I keep it.
- 11a. pǝrebǝ́ me
 beat I
 I was beating him.
- b. pǝrebǝ me
 beat I
 I was beating him.

In contrast, in sentences where nothing precedes one of the /a/-initial verbs, the clitics are in the imperfective placed either in midverbal or in post-

relativized indirectly:

- (27)a. $\begin{array}{cc} \text{rumah} & \text{orang itu diam di rumah itu} \end{array} \text{itu}$
 NP hd. S rel.
 house person the live in house the the
 " $\begin{array}{cc} \text{the house} & \text{the man lives in the house} \end{array}$ "
 NP hd. S rel.

Step 1: Objectivize the locative NP.

- (27)b. $\begin{array}{cc} \text{rumah} & \text{orang itu mendiami rumah itu} \end{array} \text{itu}$
 NP hd. S rel.
 house person the Act.-occupy-Loc. house the the
 " $\begin{array}{cc} \text{the house} & \text{the man occupies the house} \end{array}$ "
 NP hd. S rel.

Step 2: Subjectivize the derived direct object(ex-locative NP).

- (27)c. $\begin{array}{cc} \text{rumah} & \text{rumah itu didiam (oleh) orang itu} \end{array} \text{itu}$
 NP hd. S rel.
 house house the Pass.-occupy-Loc. (by) person the the
 " $\begin{array}{cc} \text{the house} & \text{the house is occupied by the man} \end{array}$ "
 NP hd. S rel.

Step 3: Relativize the derived subject(ex-derived direct object).

- (27)d. $\begin{array}{cc} \text{rumah} & \text{yang didiami (oleh) orang itu} \end{array} \text{itu}$
 NP hd. S rel.
 house REL. Pass-occupy-Loc. (by) person the the
 "The house that is occupied by the man"

Notice that we require two relation changing rules, that is, objectivization rule and subjectivization(passivization) rule, to systematically advance the underlying locative NP to an accessible position, and, in this case, it is the subject position; and we require three steps to indirectly relativize the locative NP.

Instrumental case NP which expresses an argument of the main predicate is by and large not relativizable in Bahasa Malaysia, for example:

- (28)a. $\begin{array}{cc} \text{pisau} & \text{saya memotong roti dengan pisau itu} \end{array} \text{itu}$
 NP hd. S rel.
 knife I Act-cut bread with knife the the
 " $\begin{array}{cc} \text{the knife} & \text{I cut the bread with the knife} \end{array}$ "

- (28)b. * $\begin{array}{c} \text{pisau} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{yang} \\ \text{S} \\ \text{rel.} \end{array}$ saya memotong roti dengan(nya) $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$
- knife REL. I Act.-cut bread with (it) the
- "The knife which I cut the bread with (it)"
- c. * $\begin{array}{c} \text{pisau} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{dengannya} \\ \text{S} \\ \text{rel.} \end{array}$ saya memotong roti $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$
- "The knife with it I cut the bread"

The ungrammaticality of (28b) and (28c) suggests that whether or not we do pied piping there is no way of relativizing the NP of instrumental case. However, in the data I have gathered, I have come across certain transitive verbs, such as, pukul 'hit' and tikam 'stab', that permit the instrumental case NP to be objectivized. Once the instrumental case NP is advanced to direct object position, it can subsequently be promoted to an accessible position whence it can be relativized. (29) and (30) are examples of this particular case:

- (29)a. $\begin{array}{c} \text{kayu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{saya} \\ \text{S} \\ \text{rel.} \end{array}$ memukul orang itu dengan $\begin{array}{c} \text{kayu} \\ \text{S} \\ \text{rel.} \end{array}$
- stick I Act-hit person the with stick
- " $\begin{array}{c} \text{stick} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{I} \\ \text{S} \\ \text{rel.} \end{array}$ hit the man with a $\begin{array}{c} \text{stick} \\ \text{S} \\ \text{rel.} \end{array}$ "

Step 1: Objectivize the instrumental case NP.

- (29)b. $\begin{array}{c} \text{kayu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{saya} \\ \text{S} \\ \text{rel.} \end{array}$ memukulkan $\begin{array}{c} \text{kayu} \\ \text{S} \\ \text{rel.} \end{array}$ kepada orang itu $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$
- stick I Act-hit-Cau. stick to person the
- " $\begin{array}{c} \text{stick} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{I} \\ \text{S} \\ \text{rel.} \end{array}$ used a $\begin{array}{c} \text{stick} \\ \text{S} \\ \text{rel.} \end{array}$ to hit the man $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$ "

Step 2: Subjectivize the derived direct object(ex-instrumental case NP).

- (29)c. $\begin{array}{c} \text{kayu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{kayu} \\ \text{S} \\ \text{rel.} \end{array}$ saya pukulkan kepada orang itu $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$
- stick stick I hit-Cau. to person the
- " $\begin{array}{c} \text{stick} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{a} \\ \text{S} \\ \text{rel.} \end{array}$ $\begin{array}{c} \text{stick} \\ \text{S} \\ \text{rel.} \end{array}$ was used by me to hit the man $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$ "

Step 3: Relativize the derived subject(ex-derived object).

- (29)d. $\begin{array}{c} \text{kayu} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{yang} \\ \text{S} \\ \text{rel.} \end{array}$ saya pukulkan kepada orang itu $\begin{array}{c} \text{itu} \\ \text{S} \\ \text{rel.} \end{array}$
- stick REL I hit-Cau. to person the
- "The stick which was used by me to hit the man"

- (30)a. $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \\ \text{creese} & \text{person the Act.-stab I with creese} \end{array}$ $\begin{array}{c} \text{[keris]} \\ \text{[orang itu menikam saya dengan keris]} \end{array}$
 $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \end{array}$ " $\begin{array}{c} \text{[creese]} \\ \text{[the man stabbed me with a creese]} \end{array}$ "

Step 1: Objectivize the instrumental case NP.

- (30)b. $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \\ \text{creese} & \text{person the Act.-stab-Cau. creese to I} \end{array}$ $\begin{array}{c} \text{[keris]} \\ \text{[orang itu menikamkan keris kepada saya]} \end{array}$
 $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \end{array}$ " $\begin{array}{c} \text{[creese]} \\ \text{[the man used a creese to stab me]} \end{array}$ "

Step 2: Subjectivize the derived object(ex-instrumental case NP).

- (30)c. $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \\ \text{creese} & \text{creese Pass-stab-Cau. to I by person the} \end{array}$ $\begin{array}{c} \text{[keris]} \\ \text{[keris]} \end{array}$ $\begin{array}{c} \text{[ditikamkan kepada saya oleh orang itu]} \end{array}$
 $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \end{array}$ " $\begin{array}{c} \text{[creese]} \\ \text{[a creese was used by the man to stab me]} \end{array}$ "

Step 3: Relativize the derived subject(ex-derived object).

- (30)d. $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \\ \text{creese} & \text{REL. Pass-stab-Cau. to I by person the} \end{array}$ $\begin{array}{c} \text{[keris]} \\ \text{[yang]} \end{array}$ $\begin{array}{c} \text{[ditikamkan kepada saya oleh orang itu]} \end{array}$
 "The creese which was used by the man to stab me"

Another major oblique case NP is the locative NP which expresses an argument of the main predicate, and therefore, grammatically it is different from the locative NP which has a more adverbial function. In Bahasa Malaysia, this type of major-oblique case NP is also directly accessible to relativization although relativization of this type of locative NP involves the whole prepositional phrase. Below are two of the examples:

- (31) $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \\ \text{table} & \text{I Act-put book I on top table the} \end{array}$ $\begin{array}{c} \text{[meja]} \\ \text{[saya meletakkan buku saya di atas meja itu]} \end{array}$
 $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \end{array}$ " $\begin{array}{c} \text{[table]} \\ \text{[I put my book on the table]} \end{array}$ "

By applying relativization rule to the whole adverbial phrase that contains the locative NP rel. we derive (31'):

- (31') $\begin{array}{cc} \text{NP} & \text{S} \\ \text{hd.} & \text{rel.} \\ \text{table} & \text{place I Act.-put book I} \end{array}$ $\begin{array}{c} \text{[meja]} \\ \text{[tempat]} \end{array}$ $\begin{array}{c} \text{[saya meletakkan buku saya]} \end{array}$
 "The table where(on which) I put my book"

- (32) $\frac{\text{[almari]}}{\text{NP}_{\text{hd.}}} \frac{\text{[Ali menyimpan makanannya dalam almari itu]}}{\text{S}_{\text{rel.}}}$ $\frac{\text{[]}}{\text{[]}}$
cupboard Ali Act.-store food his in cupboard the
" $\frac{\text{[cupboard]}}{\text{NP}_{\text{hd.}}} \frac{\text{[Ali stored his food in the cupboard]}}{\text{S}_{\text{rel.}}}$ $\frac{\text{[]}}{\text{[]}}$ "

By relativizing the whole adverbial phrase that contains the locative NP_{rel} we derive (32'):

- (32') $\begin{array}{c} \text{[} \text{almari} \text{]} \\ \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{[} \text{tempat} \text{]} \\ \text{S} \\ \text{rel.} \end{array} \text{Ali menyimpan makanannya} \text{]]}$
cupboard REL. Ali Act-store food his

"The cupboard where(in which) Ali stored his food"

3.5 Possessor(Genitive) NP Relativization.

The possessor NP, however, can be relativized directly in Bahasa Malaysia. But relativization of the possessor NP is quite restricted in the sense that it applies only to the possessor of subject NP, that is, the possessed NP must be the syntactic subject of S_{rel}. This also implies that the possessor of an underlying object NP is not^{rel} relativizable; and it can only be relativized after its possessed NP has been promoted to a subject position. Thus, it is obvious that in order to make the possessor of an underlying object NP accessible to relativization a passive rule is required to promote it to an accessible position whence the possessor of the derived subject NP(ex-object NP) can be relativized. Examples of these cases are as follows:

- (33) $\begin{array}{c} \text{NP} \\ \text{hd.} \\ \text{friend I} \end{array} \text{ [kawan saya]} \begin{array}{c} \text{S} \\ \text{rel.} \\ \text{teacher friend I} \end{array} \text{ [guru kawan saya memuji saya]} \text{ []}$

"[my friend [my friend's teacher praised me]]"

NP_{hd.} S_{rel.}

- (33') [/kawan saya / yang gurunya memuji saya /]
 NP S
 hd. rel.
 friend I REL. teacher his Act.-praise I

"My friend whose teacher praised me"

- (34) [/ guru Ali memuji kawan guru itu /]
NP hd. S rel.
teacher Ali Act.-praise friend teacher

"the teacher Ali praised the teacher's friend "
 NP_{hd.} S_{rel.}

- (34') * $\left[\begin{smallmatrix} \text{NP} \\ \text{hd.} \end{smallmatrix} \right] \left[\begin{smallmatrix} \text{S} \\ \text{rel.} \end{smallmatrix} \right]$ Ali memuji kawan(nya) $\left[\begin{smallmatrix} \text{REL.} \\ \text{teacher} \end{smallmatrix} \right]$ Ali Act.-praise his

"The teacher whose friend Ali praised "

Notice that (34') is ungrammatical because relativization of possessor of an object NP is totally blocked in Bahasa Malaysia, as I have mentioned earlier. However, if the object NP, in this case, kawan 'friend', is advanced to a subject position by a passive rule, then its possessor NP which is coreferential to the NP_{hd.} can be relativized, for example:

- (35)a. $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[guru Ali memuji kawan guru itu]} \\ \text{teacher Ali Act.-praise friend teacher the} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$
 $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[teacher Ali praised the teacher's friend]} \\ \text{teacher friend teacher the Pass-praise (by) Ali} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$

By passivizing the S_{rel.} of (35a) we get (35b) below:

- (35)b. $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[guru kawan guru itu dipuji (oleh) Ali]} \\ \text{teacher friend teacher the Pass-praise (by) Ali} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$
 $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[teacher the teacher's friend was praised by Ali]} \\ \text{teacher REL. friend his Pass-praise (by) Ali} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$

Now, by relativizing the possessor NP_{rel.} guru itu 'the teacher' of the derived subject NP kawan 'friend' of S_{rel.} of (35b) we would produce (35c)

- (35)c. $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[guru yang kawannya dipuji (oleh) Ali]} \\ \text{teacher REL. friend his Pass-praise (by) Ali} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$
 "The teacher whose friend was praised by Ali"

Relativization of Poss-NP is slightly different from relativization of any other NP we have witnessed so far. In addition to replacing the NP_{rel.} with a relative marker yang which is later moved out to a position immediately following the NP_{hd.} a pronoun is required to fill in the slot that is left vacant. In other words, it is appropriate for us to say that in relativizing the Poss-NP, a pronoun retention strategy is used.

3.6 Relativization of Object of Comparison.

In Bahasa Malaysia, the object of comparison is inaccessible to relativization directly or indirectly; and unlike the direct or indirect object, it cannot be systematically promoted to the subject position of a S_{rel.}, for example:

- (36) $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[pokok rumah ini lebih tinggi daripada pokok itu]} \\ \text{tree house this more tall than tree the} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$
 $\begin{array}{c} \text{NP} \\ \text{hd.} \end{array} \begin{array}{c} \text{S} \\ \text{rel.} \end{array} \begin{array}{l} \text{[tree this house is taller than the tree]} \\ \text{tree house this taller than the tree} \end{array} \begin{array}{c} \text{[]} \\ \text{[]} \end{array}$

(36') a. * $\frac{\text{pokok}}{\text{NP hd.}} \frac{\text{yang}}{\text{S rel.}} \text{rumah ini lebih tinggi daripada(nya)}$ //

tree REL. house this more tall than it

" $\frac{\text{The tree}}{\text{NP hd.}} \frac{\text{which}}{\text{S rel.}} \text{this house is taller than (it)}$ //

(36') b. * $\frac{\text{pokok}}{\text{NP hd.}} \frac{\text{yang}}{\text{S rel.}} \text{daripadanya rumah ini lebih tinggi}$ //

tree REL. than it house this more tall

" $\frac{\text{The tree}}{\text{NP hd.}} \frac{\text{which}}{\text{S rel.}} \text{than it this house is taller}$ //

(36'a) and (36'b) clearly illustrate that no matter how the words are rearranged there is no way to relativize the coreferential NP_{rel} as long as it is the object of comparison. The only way to relativize the coreferential NP_{rel}, in this case, pokok itu 'the tree', is to resort to lexical reorganization. The original S_{rel} of (36) has to be reorganized lexically so that pokok itu occurs in the subject position of the S_{rel}:

(37) $\frac{\text{pokok}}{\text{NP hd.}} \frac{\text{pokok itu}}{\text{S rel.}} \text{lebih rendah daripada rumah ini}$ //

tree tree the more short than house this

" $\frac{\text{tree}}{\text{NP hd.}} \frac{\text{the tree}}{\text{S rel.}} \text{is shorter than this house}$ //

By applying relativization rule to the S_{rel} of (37) we get (37'):

(37') $\frac{\text{pokok}}{\text{NP hd.}} \frac{\text{yang}}{\text{S rel.}} \text{lebih rendah daripada rumah ini}$ //

"The tree which is shorter than this house"

4.0 Reduced Relative Clause.

A restrictive relative clause in Bahasa Malaysia can be reduced by deleting the relative pronoun/marker yang 'who/which/that'. Deletion of yang may be looked upon as equivalent to English 'Wh-be' deletion. However, the restrictive relative clause reduction can only apply to the restrictive S_{rel} that has an adjectival predicate. After the deletion of yang the adjective remains in the same position, for in Bahasa Malaysia the NP modifier must always come after the NP it modifies. With the dropping of yang the relative clause is now changed to an adjectival phrase; and this syntactic change can be seen in the following examples:

(38) orang yang gemuk itu
person REL. fat the

"The man who is fat"

(39) Bangunan yang tinggi itu

building REL. tall the

"The building that is tall"

After deleting the relative marker yang from (38) and (39) above, we now have (38') and (39') both of which are now considered adjectival phrases:

(38') orang gemuk itu ...

person fat the

"the fat man"

(39') bangunan tinggi itu ...

building tall the

"the tall building"

Restrictive relative clause reduction is not operable on all adjectival predicates of the restrictive S_{rel} , for example:

(40) bunga yang sangat cantik itu ...

flower REL. very pretty the

"The flower which is very pretty"

(40') *bunga sangat cantik itu ...

flower very pretty the

"the very pretty flower .."

(41) bunga yang tidak cantik itu ...

flower REL. not pretty the

"The flower which is not pretty"

(41') *bunga tidak cantik itu ...

flower not pretty the

"the not pretty flower...."

(42) buku yang lebih tebal itu ...

book REL. more thick the

"The book which is thicker"

(42') *buku lebih tebal itu

book more thick the

"the thicker book"

The ungrammaticality of constructions like (40') - (42') clearly indicates that restrictive relative clause reduction is always blocked when there are constituents such as intensifiers, negatives or comparators intervening in between the relative marker yang and the adjective which is the predicate of the S_{rel} . In other words, there is constraint in Bahasa Malaysia which does not permit restrictive relative clause reduction to operate if the predicate of the S_{rel} is not a single adjective. So, it might not be incorrect for me to claim that, in Bahasa Malaysia, it is impossible to literally express in written form such adjectival phrases:

'the very pretty flower' and 'the thicker book'.

5.0 Yang As The Relative Marker.

Having seen all the examples of Bahasa Malaysia restrictive relative clauses, I think it is time we tried to find out if it is true that yang is the only invariable relative marker used in Bahasa Malaysia. Examples (22'), (23'), (24'), (25') and (26') seem to suggest that other relative markers such as tempat 'place', ketika 'when', kawan 'friend', and teman 'companion' are used when the NPs_{rel} are locative, temporal and comitative. However, close and careful examination of all examples given reveals the fact that it is quite correct for one to claim that only the invariable relative marker yang is employed to relativize the NP_{rel} that is in the subject position. And it is strongly supported by such examples as (1), (2), (3), (4), (5), (6), (7), (8), (10), (12), (13), (14'), (20'), (27a), (29d), and (30d). Since yang is used to relativize any subject NP_{rel} in Bahasa Malaysia irrespective of its semantic properties or features, it may, then, be more accurate to equate the relative marker yang with English that which can also be used to fulfill similar syntactic and semantic functions.

6.0 Basic Constraint For Western Malayo-Polynesian Languages.

Before determining whether or not Bahasa Malaysia violates the Basic Constraint as it has been proposed in Keenan (1972), it is better for us to thoroughly examine the Basic Constraint first. The Basic Constraint is as follows:

Basic Constraint

An NP position in a sentence can be relativized into if, and only if, it is the subject position of the sentence.

(Keenan 1972: 173)

What the Basic Constraint actually expresses, as I understand it, is that an NP in a S_{rel} can be relativized if, and only if, it is the subject NP of the S_{rel}. If my interpretation of the Basic Constraint is correct, then I would say that the Basic Constraint does not, in any way, refer to the prepositional or adverbial phrases that contain the coreferential NPs_{rel} such as those phrases underlined in examples (22), (23), (24), (25), (26)_{rel}, (31) and (32). Examples (22'), (23'), (24'), (25'), (26'), (30') and (31') and vividly illustrate that what are actually relativized are not the individual coreferential NPs, but rather the whole prepositional or adverbial phrases; and these relativized phrases are replaced by such relative markers as tempat 'where', ketika 'when', etc. The fact that these relative markers can never be replaced by the invariable relative marker yang 'that' which is used only to replace the relativized subject NP, can be seen in examples (23''), (24'') and (25''). If one compares example (23') to that of (27) repeated here for convenience, one would be able to see the different grammatical roles played by the relative markers tempat 'where' and yang 'that':

(23') rumah tempat orang itu diam ...
house REL. person the live

"The house where the man lives"

(27) rumah yang didiami (oleh) orang itu
 house REL. Pass-occupy-loc. (by) person-the
 "The house which is occupied by the man....."

Further, the fact that, in Bahasa Malaysia, it is only the subject NP, be it underlying or derived, that can be relativized, can be substantiated by such examples as (1), (2), (3), (4), (5), (6), (7), (8), (10), (13), (14), (15), (20), (21), (27), (29) and (30).

Thus, on the basis of the facts given above, I would claim that contemporary Bahasa Malaysia (Malay) conforms to the Basic Constraint. So, my claim obviously suggests that Keenan's observation, that contemporary Malay (Bahasa Malaysia) does not conform to the Basic Constraint, can be easily refuted.

7.0 The Hierarchy Constraints.

Since throughout this paper the model of Accessibility Hierarchy has been used as a basis for examining the relativizability of various NP positions in Bahasa Malaysia, it is only proper that Hierarchy Constraints are examined now so that correct decision as to whether these constraints are consistent with Bahasa Malaysia relativization can be made later. The Hierarchy Constraints proposed by Keenan and Comrie (1977) are as follows:

Hierarchy Constraints

1. A language must be able to relativize subjects.
2. Any RC-forming strategy must apply to a continuous segment of the Accessibility Hierarchy.
3. Strategies that apply at one point of the AH may in principle cease to apply to any lower point.

The first constraint is very straight forward, and it definitely fits Bahasa Malaysia quite well, for all subjects can be relativized in Bahasa Malaysia (see examples (1) - (7)).

The third constraint which states that each NP position of the AH is a possible cut-off point for any strategy that applies to a higher NP position does not pose any problem for Bahasa Malaysia, for we have seen that Poss-NP (Gen.) position on the AH is the cut-off point for Bahasa Malaysia (see example (33')), and the lower NP position, that is, the object of comparison is not relativizable at all.

The second constraint is, in my opinion, the most important and most controversial of all; and it states that if a given RC-forming strategy can apply to subjects and locatives, then it can also apply to direct objects as well as indirect objects on the AH. It appears that this second constraint is too strong for Bahasa Malaysia because it has been shown that in Bahasa Malaysia the RC-forming strategy that can apply directly to both subject and Poss-NP (see examples (8) and (33')) fails to apply directly to direct object, indirect object and oblique objects such as locative and instrumental case NP (see examples (14b), (16b/c) and (28b/c)). Thus, it is obvious that Bahasa Malaysia poses a great problem for the second Hierarchy

Constraint. Unless this second Hierarchy Constraint is modified, Bahasa Malaysia will remain a counterexample to Keenan and Comrie's Accessibility Hierarchy.

Perhaps the second Hierarchy Constraint may be modified with certain qualification, that is, by adding a qualifying phrase such as 'directly or indirectly' at the end of the constraint so that the modified constraint will now read: Any RC-forming strategy must apply to a continuous segment of the Accessibility Hierarchy directly or indirectly. By 'indirectly' I mean that the 'inaccessible' NPs, in this case the direct, indirect and oblique objects, can be systematically promoted to an accessible position whence they can be relativized (see examples (13c), (14c), (20'), (21'), (29d) and (30d)) and that the 'inaccessible' NPs are said to be indirectly relativized when actually the whole prepositional phrases in which the 'inaccessible' NPs occur are relativized (see examples (22'), (23'), (24'), (25'), (26'), (31') and (32')). Now, it seems that the modified constraint may be able to account for the relativization of the NPs lying in the strategy gaps between the subject and the Poss-NP.

However, on second thoughts I will not guarantee that the modified Hierarchy Constraint can adequately account for the relativization of the NPs lying in the strategy gaps because there is still ground for one to argue that the relativized NPs such as those seen in examples (13c), (14c), (20'), (21'), (29d) and (30d) are actually not the syntactic direct, indirect and oblique objects, but rather the current syntactic subjects (derived subjects) at the point of the application of the rule.

On the basis of the facts given, therefore, one can easily argue that direct relativizability of a lower NP position on AH does not necessarily entail direct relativizability of all higher NP positions.

In conclusion I would claim that Bahasa Malaysia presents a good counterexample to Keenan and Comrie's Accessibility Hierarchy.

NOTES

¹ I would like to take this opportunity to express my sincere gratitude to those who have helped me in various ways. Professors J. L. Morgan and Yamuna Kachru for their interest and encouragements and for their valuable comments and suggestions which are incorporated in this paper. Also special thanks are due to Drs. Ismail Salleh, Aris Mohd. Othman and Dono I. Djoj-subroto for helping me to collect some samples, check and countercheck my samples used throughout this paper.

² Bahasa Malaysia (Malaysian Language) was formerly known as Bahasa Melayu (Malay). Bahasa Malaysia was made the National Language of Malaysia after the Federal Malay States had achieved self-government in 1955. By and large Bahasa Malaysia is spoken by about 100,000,000 people throughout Malaysia, Singapore, Brunei and Indonesia. In Malaysia there are many dialects and varieties of Bahasa Malaysia spoken. But in this paper I have concentrated on the standard dialect spoken in West Malaysia. The spelling

system used is the newly revised common spelling system for romanized Bahasa Malaysia and Indonesian, which has been agreed upon by both Malaysian and Indonesian Governments and which is being implemented in both countries now.

³ There are many problems with this construction. First, there is a wrong choice of lexical item such as the verb bunuh (old spelling bunuh) 'murder'. No Malay will eat the chicken that was murdered or killed. According to Malay culture and religion a Malay Muslim like Aminah will certainly not eat the chicken that was not properly slaughtered. Thus, the wrong choice of verb makes this construction sound very awkward to the native speakers of Bahasa Malaysia. Secondly, the matrix sentence is neither an active nor a passive sentence. To be an active sentence its verb lacks the active marker /meng+/ and to be a passive sentence the NP that appears to the immediate left of the verb stem (bunuh) as it is in this context free situation does not have the reference of first or second person. So, the NP_{hd} ayam 'chicken' is neither the syntactic object nor the syntactic subject of the matrix S (compare this matrix S Ali bunuh ayam to those of Chung and mine below):

- (1) *Buku itu Ali baca. OR *Ali baca buku itu. (Subj.-Predicate inversion)
 book the Ali read
 (The book, Ali read) (Chung 1976b: 61)
- (2) *Ahmad pukul budak itu. OR *Budak itu Ahmad pukul.
 Ahmad hit child the
 (Ahmad hit the child OR The child, Ahmad hit)

Chung's reason for ruling out such sentence as (1) above is that Ali is a proper name, which to me is unacceptable.

⁴ Chung's original construction appears in the old Indonesian spelling and it is as follows:

Ikan yang saya masak untuk Ali tidak enak rasanya.

"The fish that I cooked for Ali didn't taste good."

To show that NP_{rel} of S_{rel} above is actually the derived subject and NOT the syntactic object of S_{rel}, I would like to make use of Chung's own examples to refute her claim, for example:

- (40)a. Ikan itu saya(saya) masak. (Object Preposing = Q-Passive)
 "The fish I cooked (OR The fish was cooked by me)"
 (Chung 1976a: 52)
- (3)a. Buku itu saya(saya) batja(baca).
 book the I read
 "The book I read (OR The book was read by me)"
- b. Ali saya(saya) pukul.
 Ali I hit
 "Ali I hit (OR Ali was hit by me)"
 (Chung 1976b: 60)

Chung has argued at length that the preposed NP (underlying object) is a derived subject syntactically. Now, if the preposed NPs such as buku itu of (3a), Ali of (3b) and especially ikan itu of (40a) above, all of which

are quite similar to the underlined S_{rel} -ikan(itu) saja masak untuk Ali -structurally, are considered the derived syntactic subjects, then why should ikan(itu) of the underlined S_{rel} be deemed differently by Chang as the syntactic direct object. Isn't this contradictory? I what follows I will show that if ikan(itu) '(the) fish' of the underlined S_{rel} is indeed the syntactic direct object of S_{rel} , then it is not relativizable, for example:

*Ikan yang saya masak untuk Ali tidak enak rasanya.
fish REL. I Act.-cook for Ali not good taste its
"The fish that I cooked for Ali didn't taste good."

⁵The prefix /meng+/ 'active marker' is changed to /menge+/ when the verb stem is monosyllabic; and the /ng/ of /meng+/ is always homorganic with the initial consonant of a disyllabic or trisyllabic verb stem (there are a few exceptions), which in certain cases subsequently drops, for example:

meng+lap → meng+e+lap → mengelap 'wipe'
meng+ukul → mem+ukul → memukul 'hit'
meng+baca → mem+baca → membaca 'read'

⁶This inseparable unit can be formed by placing an NP, which must have a reference of first or second person, on the immediate left of the verb stem. It is viewed as inseparable because no independent morpheme is permitted to come in between the NP and the verb stem; and in this way it is said to be the same as any passivized verb, that is, di+verb stem.

⁷This construction is the result of Subject-Predicate inversion. In Bahasa Malaysia the constituents of Subject and Predicate can be permuted, for example:

1. Dia guru besar. → Guru besar, dia. (Subj.-Pred. inversion)
he teacher big
"He is a headmaster."
2. Orang itu membaca buku. → Membaca buku, orang itu.
person the Act.-read book
"The man read a book."
3. Ikan itu dimakan kucing. → Dimakan kucing, ikan itu.
fish the Pass-eat cat
"The fish was eaten by a cat."

However, it ought to be pointed out here that direct object cannot be preposed if the grammatical relation it bears to the verb remains unchanged. Thus, it is not permissible to prepose buku 'book' of (2) above.

*Buku orang itu membaca.
book person the Act-read
"A book the man read."

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THE RISE AND FALL OF A TRANSDERIVATIONAL CONSTRAINT:
THE CASE OF MALAY

Lee A. Becker & Farid Mohamed Onn

In this paper we will present evidence supporting the existence of a phonological transderivational constraint. We will discuss the manner in which it was eliminated, and why individual morphemes were treated differently. We will compare this example with several proposed syntactic and morphological transderivational constraints and note their common function - avoidance of ambiguity. Finally, we will discuss the hypothesis of a universal characterization of when potential ambiguity is not tolerated and describe one type of example which, if found, could readily show that this hypothesis is false.

Johore Malay (JM) is a dialect spoken predominantly in the southern part of the Malay peninsula. /m@ŋ/ is a prefix which serves as a transitive marker. (The symbol @ represents a schwa.)

- | | | | | |
|-----|---------|--------|-------------|-----------|
| (1) | /darat/ | 'land' | /m@ŋ+darat/ | 'to land' |
| | /paku/ | 'nail' | /m@ŋ+paku/ | 'to nail' |

Together with the suffix /i/ or /kan/, the prefix /m@ŋ/ also can serve as a causative marker.

- | | | | | |
|-----|---------|----------------|-----------------|-------------------------|
| (2) | /čumbu/ | 'to caress' | /m@ŋ+čumbu+i/ | 'to cause to caress' |
| | /š@rah/ | 'to surrender' | /m@ŋ+š@rah+kan/ | 'to cause to surrender' |

The final nasal consonant of the prefix /m@ŋ/ and the initial consonants of root morphemes are involved in some interesting phonological interactions. /m@ŋ/ and /p@ŋ/ are the only nasal-final prefixes in JM. All the phonological interactions that occur with /m@ŋ/ are exactly the same for /p@ŋ/, which is a nominal prefix corresponding roughly in meaning to the -er nominal suffix in English.

A phonological rule of nasal assimilation (NA), whereby a nasal becomes homorganic to a following obstruent, is motivated by the following forms; there are no sequences of nasal plus non-homorganic obstruent in JM.¹

- | | | | |
|--------|------------------------|--------------------------|---------------|
| (3) a. | /m@ŋ+bawa/ | /m@ŋ+bunuh/ | /m@ŋ+buru/ |
| | [m@mbaw@] ² | [m@mbunuh] | [m@mburu] |
| | 'to carry' | 'to kill' | 'to hunt' |
| b. | /m@ŋ+daki/ | /m@ŋ+dokon/ | /m@ŋ+dakap/ |
| | [m@ndaki] | [m@ndokon] | [m@ndakap] |
| | 'to climb' | 'to carry on one's back' | 'to embrace' |
| c. | /m@ŋ+gali/ | /m@ŋ+gošok/ | /m@ŋ+gari/ |
| | [m@ŋgali] | [m@ŋgošok] | [m@ŋgari] |
| | 'to dig' | 'to rub' | 'to handcuff' |

- | | | | |
|----|--------------------------|-------------|-------------|
| d. | /mɛŋ+jolok/ | /mɛŋ+jawab/ | /mɛŋ+jahit/ |
| | [mɛŋjolok] | [mɛŋjawap] | [mɛŋjahet] |
| | 'to pole down from tree' | 'to answer' | 'to sew' |

The velar nasal has been chosen as underlying in the prefix /mɛŋ/ since it appears on the surface when the prefix is combined with vowel-initial roots.

- | | | | |
|-----|------------|------------|--------------|
| (4) | /mɛŋ+ajar/ | /mɛŋ+adil/ | /mɛŋ+undur/ |
| | [mɛŋajar] | [mɛŋadel] | [mɛŋundur] |
| | 'to teach' | 'to judge' | 'to retreat' |

When a root begins with a voiceless obstruent, in place of the underlying final nasal of the prefix and the initial obstruent there appears on the surface only a nasal homorganic to the underlying obstruent. To account for this, we propose a rule of voiceless obstruent deletion (VOD), which is to be ordered after NA. VOD is formulated in (5a). (5b) gives a sample derivation. (6a-d) illustrate the application of NA and VOD on a series of roots with initial voiceless obstruents.

- (5) a. voiceless obstruent → Ø / nasal ____

- | | | |
|----|-----|------------|
| b. | | /mɛŋ+palu/ |
| | NA | mɛmpalu |
| | VOD | mɛmalu |

- | | | | |
|--------|-------------|------------|------------|
| (6) a. | /mɛŋ+pukul/ | /mɛŋ+palu/ | /mɛŋ+puŋŋ/ |
| | [mɛmpukol] | [mɛmpalu] | [mɛmpuŋŋ] |
| | 'to beat' | 'to club' | 'to turn' |

- | | | | |
|----|------------|-------------|-------------|
| b. | /mɛŋ+tari/ | /mɛŋ+tarik/ | /mɛŋ+taruh/ |
| | [mɛntari] | [mɛntarek] | [mɛntaroh] |
| | 'to dance' | 'to pull' | 'to put' |

- | | | | |
|----|------------|-------------|-------------|
| c. | /mɛŋ+kail/ | /mɛŋ+kayuh/ | /mɛŋ+koyak/ |
| | [mɛŋkæil] | [mɛŋkayoh] | [mɛŋkoyak] |
| | 'to bait' | 'to paddle' | 'to tear' |

- | | | | |
|----|-------------|-------------|---------------|
| d. | /mɛŋ+šamun/ | /mɛŋ+šalin/ | /mɛŋ+šamar/ |
| | [mɛŋšamon] | [mɛŋšalen] | [mɛŋšamar] |
| | 'to rob' | 'to copy' | 'to disguise' |

The symbol š represents an alveopalatal. As is evident from (6d), it assimilates with the palatal n, not the alveolar n.

Most interesting is the behavior of c-initial roots. In certain roots the c is not deleted (7), while in others it is optionally deleted (8). The lack of deletion in (7) vs. optional deletion in (8) of initial /ʃ/ of roots when prefixed by /mɛŋ/ appears to be conditioned by the presence vs. absence in the lexicon of another root with the same phonological make-up as the one with initial /ʃ/ except that the first phoneme is /š/.

- (7) a. žatu 'to ration'
 m@ñčatu+i 'to cause to ration'
 dičatu+i 'to cause to be rationed'
- šatu 'one'
 m@ñšatu+i 'to cause to unite'
 dišatu+i 'to cause to be united'
- b. žolek 'to kidnap'
 m@ñžolek 'to kidnap (active)'
 dižolek 'to kidnap (passive)'
- šolek 'to make-up'
 m@ñšolek 'to make-up (active)'
 dišolek 'to make-up (passive)'
- c. č@rah 'bright'
 m@ñč@rah-kan 'to cause to brighten for'
 dič@rah-kan 'to cause to be brightened for'
- š@rah 'to surrender'
 m@ñš@rah-kan 'to cause to surrender for'
 diš@rah-kan 'to cause to be surrendered'
- d. čumbu 'to caress'
 m@ñčumbu+i 'to cause to caress'
 dičumbu+i 'to cause to be caressed'
- šumbu 'wick'
 m@ñšumbu+i 'to cause to wick'
 dišumbu+i 'to cause to be wicked'
- (8) a. žiom 'to kiss' *šium
 m@ñčium+i ~ m@ñium+i 'to cause to kiss someone'
- b. čubet 'to pinch' *šubet
 m@ñčubet+i ~ m@ñyubet+i 'to cause to pinch someone'
- c. čonten 'to smear' *šonteny
 m@ñčontiŋ+i ~ m@ñotiŋ+i 'to cause to smear'

The lack of deletion in (7) serves to avoid homophony of the prefixed forms of roots with initial /č/ and those with initial /š/. This is illustrated in (9).

- (9) /m@ŋ + pVCV/ /m@ŋ + tVCV/ /m@ŋ + kVCV/ /m@ŋ + šVCV/ /m@ŋ + čVCV/
 [m@ŋVCV] [m@ŋVCV] [m@ŋVCV] [m@ŋVCV] [m@ŋVCV]

Note that the homorganic nasals are sufficient to distinguish roots with the other initial voiceless obstruents /p t k/. In a sense in these cases the opposition in place of articulation is displaced from the obstruent to the nasal. However, in the case of /š/ and /č/ were the deletion to take

place in both cases, this opposition would be neutralized. What we have here is an interesting and unusual phenomenon, i.e. the application of a phonological rule is sensitive to whether or not another root exists in the lexicon. This type of phenomenon might be referred to as a transderivational constraint. It is only with reference to another derivation that the impending homophony of surface forms can be avoided.

In (8) we see roots with initial /č/ where no corresponding root with initial /ś/ exists; in this case the deletion of /č/ is optional. We assume that in this case the original situation was that deletion did occur; however, we also assume that the unusual transderivational constraint is being eliminated and is being replaced by a lack of deletion of /č/ in all cases. At the present time the variant with /č/ retained is more frequent and is especially found in foreign borrowings, e.g. /mʔ+čelen/ - [mʔčelen] 'to challenge' and not *[mʔčelen]. We assume that the diachronic sequence of stages is represented in (10a-c).

(10a). Regular deletion; all voiceless obstruents.

(10b). Deletion of /č/ blocked where corresponding root exists with initial /ś/.

(10c). Deletion of /č/ blocked everywhere, i.e. /č/ doesn't delete.

The data in (11) provide support for the diachronic analysis proposed thus far. In these cases we find variation not only in the prefixed form, with vs. without č, but also in the form of the root.

- (11) a. $\begin{matrix} \text{čambok} \\ \text{śambok} \end{matrix} \}$ 'whip'
 mʔčambok ~ mʔśambok 'to whip (active)'
- b. $\begin{matrix} \text{čʔlok} \\ \text{śʔlok} \end{matrix} \}$ 'to dip'
 mʔčʔlok-śaku ~ mʔśʔlok-śaku 'to pick pocket'
- c. $\begin{matrix} \text{čuči} \\ \text{śuči} \end{matrix} \}$ 'clean'
 mʔčuči ~ mʔśuči 'to clean (active)'

Here we assume that the root originally had an initial /č/. The /ś/-initial root forms would be back formations. As stage (10c) becomes the rule, a surface form like [mʔśambok] would be interpreted as coming from a root with initial /ś/.

The question immediately arises as to why some /č/-initial roots, those in (8), without corresponding /ś/-initial roots, would be treated differently from others, those in (11). We assume that the difference is connected with the relative frequency of usage of the prefixed vs. unprefixed forms of these two classes. A glance at the glosses in class (8) is sufficient to reveal that the causatives here would have an extremely limited sphere of usage. Presumably the causatives in this group would be heard

less than 1/100 as frequently as the corresponding non-causatives; conceivably, they might not be heard even once in a speaker's lifetime. In class (11), however, the transitives would have a much wider scope of application, and thus, presumably, could play a much greater role in the speaker's determination of an underlying form for this root.

What must be emphasized is the method of avoidance of the potential homophony. On the basis of the later development we infer that the individual lexical items were not merely marked as exceptions, but rather a transderivational constraint was instituted. A situation came to exist whereby a speaker 'checked' the lexicon for the presence of another root, and if one existed, the rule was blocked. Later this presumably costly-to-the-grammar 'check' was eliminated. The fact that this potential ambiguity involved a significant class of roots, at least twenty pairs, may have been involved in the adoption of this particular method of avoidance.

What we have proposed is the rise of a transderivational constraint serving to avoid homophony between prefixed forms of /ɛ/- and /s/-initial roots by blocking the application of a phonological rule, VOD, in those /ɛ/-initial roots. This transderivational constraint is being eliminated by the generalization of the non-application of VOD to all instances with /ɛ/. As a result, some commonly occurring forms exhibiting the earlier deleted form of the root have been interpreted as being from underlying /s/-initial roots.

Several syntactic transderivational constraints have been proposed recently. Lakoff (1973) illustrates that some forms of ambiguity are not permitted in natural language with (12).

- (12)a. John and Mary entered the room, and he took off his coat.
 (12)b. *John and Bill entered the room, and he took off his coat.⁴

In Grinder and Postal (1971) the term transderivational is used to describe the constraint that would block the derivation in (12b) in either of its readings. It is transderivational in that the ambiguity is not a property of a single derivation. The purpose of this instance of a transderivational constraint appears to be to avoid referential ambiguity.

Hankamer (1973) is concerned with characterizing what kind of ambiguity is unacceptable. Hankamer (1973:40) formulates The Structural Recoverability Hypothesis: 'Deletion rules involving variables are universally subject to a transderivational condition which prevents them from applying in such a way as to introduce structural ambiguity.' He notes two ways in which this condition can be manifested. First, both, or all, ambiguous outputs can be blocked. Hankamer (1973:40-41) cites as an example that although there is a rule which deletes constituents from a comparative clause under identity with a constituent marked by the comparative morpheme more or -er, if the comparative clause contains a V NP NP sequence, neither NP can be deleted. This follows since deletion of a constituent of the type X from a sequence XX would result in structural ambiguity. Consider (13a) in which deletion is blocked whether (13a)'s source would correspond to (13b) or (13c).

(13a) *In Berlin there are more widows, than matchmakers give wealthy old bachelors.

(13b) _____, than matchmakers give widows wealthy old bachelors.

(13c) _____, than matchmakers give wealthy old bachelors widows,

The second means by which structural ambiguity is avoided is by blocking only one derivation. Hankamer (1973:31) cites an example of this involving Gapping:

(14a) Jack calls Joe Mike and Sam Harry.

(14b) _____ and ✓[Jack calls] Sam Harry.

(14c) _____ and Sam *[calls Joe] Harry.

(14a) can only be derived from (14b), not (14c). To account for this type of solution Hankamer (1973:31) proposed The Peripheral Gap Principle: 'If any interpretation is possible for an unacceptably ambiguous structure it will be the interpretation under which the location [of the deletion] is peripheral rather than internal.' Hankamer does not suggest a possible motivation for this principle, nor does he deal with the question of why one of the methods rather than the other is used in a particular case. Notice in the example from Malay the second type of avoidance is utilized, i.e. only the deletion of /ɛ/ is blocked. This raises the important question of why /s/ and not /ɛ/ is allowed to delete. The only explanation that we can offer is that /s/ is a more frequently encountered phoneme than /ɛ/. The correctness of Hankamer's analyses are not in question here. They are presented to illustrate one type of ambiguity potentially caused by the application of a syntactic rule, which may be avoided by means of a transderivational constraint.

In 'A Case of Systematic Avoidance of Homonyms' Kisseberth and Abaskeikh (1974) propose a transderivational constraint which applies to the application of a morphological rule. Kisseberth and Abaskeikh argue that the normal means of forming the past tense of stems ending in 1 or 2 with an applied suffix in Chi-Iwi:Ni is ablaut. However, if the ablauted form would be identical to the past tense of the non-applied stem, then a suffixed form of the past tense is employed. Compare /mo:ɪ/ 'shave', which forms the past of the applied in the normal manner, with /su:l/ 'want', where were the past of the applied to be formed in the normal manner, i.e. by the ablaut for stems ending in 1 or 2, it would be identical to the past of the non-applied. Instead, /su:l/ forms the past of the applied by means of suffixation.

(15)	Past of non-applied	Applied stem	Past of applied
	/mo:ɪ/ mo:z-eɪ-e	mo:l-eɪ-	mo:l-eɪ-e
	/su:l/ sul-i:l-e	su:l-il-	*sul-i:l-e sul-il-i:l-e

Notice the application of a rule change 1 - z in the past tense. One of the strongest arguments in favor of Kisseberth and Abaskeikh's analysis is that in cases where the normal 1 - z rule exceptionally does not apply to a morpheme, the suffixed form of the past of the applied occurs, since ablaut would create a past tense applied form which was identical to the past tense non-applied. This transderivational constraint serves to avoid

morphological ambiguity.

In the foregoing discussion transderivational constraints have been proposed to account for referential, structural, morphological, and lexical ambiguity. They have been proposed as conditions on syntactic, morphological, and phonological rules. The common denominator of all these proposed transderivational constraints is the avoidance of ambiguity.

In order to claim that avoidance of ambiguity is always the motivation of a transderivational constraint, i.e. that it is the only motivation of a transderivational constraint, one would have to show that all proposed transderivational constraints which have other functions are wrong, i.e. that some other device is more appropriate to account for the data in each case. This will not be done here; we have not surveyed all the proposed transderivational constraints. We will, however, question the appropriateness of one transderivational constraint proposed in an article cited above.

Grinder and Postal (1971:291) propose a transderivational constraint to account for the ungrammaticality of (16b) and (16c).

- (16a) The wheat Harry bought seems to be regenerating itself.
- (16b) *The oats Harry bought seem to be regenerating itself.
- (16c) *The oats Harry bought seem to be regenerating themselves.
- (16d) The oats Harry bought seem to be self-generating.

Grinder and Postal (1971:292) propose constraint (65): 'A derivation will be ill-formed if it contains a structure in which an NP whose head is the lexical item OATS is the Antecedent for coreferential anaphoric pronouns which morphologically mark the contrast singular/plural.' In a footnote (1971:292 FN 24) they claim: 'A constraint like (65) is not representable within terms of any hitherto proposed theory of linguistic rules. It has a property we can call transderivational, that is, the definition, in particular, the phrase, 'morphologically mark the contrast singular/plural', must refer to the set of derivations, not just to the properties of the trees internal to derivations.'

We do not see why a transderivational constraint must be invoked here, or which are the other derivations one must check. Whether or not the pronouns itself or themselves can be used to refer to oats is a function of whether certain grammatical (or semantic) properties of these morphemes match. Thus the reason itself or themselves cannot be used to refer to oats is the same kind of reason that themselves cannot be used to refer to wheat or that she cannot refer to Bill. Regardless of the manner of representing these features, which features are utilized, and how they are introduced, it seems to us reasonable to assume that the reason that itself and themselves cannot be used to refer to oats is that some features of these morphemes do not match, and thus has nothing to do with other derivations. We feel that the appeal to a transderivational constraint here is unwarranted.

We have seen several cases of ambiguity which have been avoided in

natural languages, yet we know that some ambiguity is tolerated. Either there exists a way to characterize those instances where it is avoided or there is no difference in kind between the two classes. We will refer to the first possibility as the Universal Non-Toleration Hypothesis (UNH). UNH could be disproved by two examples of potential ambiguity which are alike in every way except that one is avoided and the other is tolerated. The problem of what characteristics we compare and how to evaluate when they are the same is, of course, considerable. In (17) we list some tentative characteristics of the instance presented above.

- (17a) The ambiguity is introduced by the application of a phonological rule.
- (17b) The ambiguity which is introduced is lexical, and the ambiguous items are roots, rather than affixal morphemes.
- (17c) Both instances which create the potential homophony were introduced by the application of the same rule.
- (17d) This phonological rule is of a more general nature, i.e. other segments are also affected by its application.
- (17e) This is a rule of deletion.
- (17f) A previous assimilation results in a displaced contrast which would be suspended were the rule to apply regularly.
- (17g) The potential ambiguity does not involve only an isolated example, but involves a whole class; presumably the number of examples or size of the class could be pertinent.
- (17h) Some instances of the application of this deletion rule to the pertinent segments do not introduce ambiguity.

The reality of UNH and especially the characterization of when ambiguity is unacceptable would be very revealing about language. We assume that not a single union of characteristics, but a set of separate unions would be necessary to define the environment for non-toleration, i.e. a different set of characteristics would be necessary to define it when it was introduced by a phonological, rather than a syntactic rule or when the ambiguity is structural, rather than lexical. Not only is this assumption intuitively appealing, but the structural ambiguity ruled out by Hankamer, which would result from the deletion of a constituent X from a sequence XX, does not seem to apply for phonological rules; since degemination is a common phonological process.

The characteristics listed in (17) can be compared with other instances of the avoidance of ambiguity in order to make stronger claims about the ultimate nature of a universal characterization, if one exists. At present all we may do is suggest that if the characteristics (17a-g) are found in an example where ambiguity is allowed, UNH is invalid.

NOTES

¹ The only exceptions to this statement are reduplicated forms and before the suffix /kan/. For examples and details consult Onn (1976).

² This word-final reduction of /a/ → [ə], as well as vowel lowering in closed syllables (/i,u/ → [e,o]) and final devoicing are not relevant

to the thesis of this paper. The interested reader can consult Onn (1976): section 2.4, and pages 30 and 15, respectively. We have chosen not to represent final glottal formation in the phonetic representations; this process, which takes g and k to a glottal stop word-finally and before another stop, is discussed in Onn (1976:15-21).

³However /k/-initial roots and vowel-initial roots both show up with the velar nasal. For example, /m@ŋ+kawal+kan/ [m@ŋawalkan] 'to cause to guard for' vs. /m@ŋ+awal+kan/ 'to give priority to' (extremely infrequent). Although in principle this creates homophony, it so happens that there are very few corresponding pairs.

⁴Lakoff (1973:442). It should be noted that (12b) may be acceptable if he is somehow disambiguated. This disambiguation could be a result of prior reference: for example, if (12b) was preceeded by the utterance: 'You know that crazy guy Bill.' This disambiguation might also be the result of an extralinguistic gesture like pointing. What is involved here is the interplay of syntax and pragmatics, in particular the process of pronominalization and its function of referring. The constraint only holds if the pronoun he is not otherwise disambiguated.

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TONAL CORRELATIONS IN CHINESE DIALECTS: A QUANTITATIVE STUDY*

Chin-Chuan Cheng

If a tonal language has a falling tone, how likely is it to have a level tone also? Can a falling-rising tone coexist with another falling-rising tone (of a different pitch height) in a language? This paper deals with the cooccurrences of basic tones in 737 Chinese dialect localities surveyed by various scholars and organizations. These tone systems encompassing all the Chinese dialect groups were stored on a computer file, and the computer was utilized in an extensive search for correlations. The parameters involved are contours (level, rising, falling, rising-falling, falling-rising) and height (high, low). On the basis of the data collection, general statements of possible coexistence of tones are given. Correlation coefficients between different contours have also been obtained. Implications of the findings for the reconstruction of 16th century Pekingese are also discussed.

1. FREQUENCY OF INDIVIDUAL TONES. This study examines the occurrences of basic tones in Chinese dialects. The empirical basis is a collection of the tone systems of 737 dialect localities, obtained from various surveys and other literature. Some results of a quantitative study of the tones are already given in Cheng (1973). The present work tries to bring into focus how various tones are synchronically mutually related.

The five-point scale system with 1 representing the lowest and 5 the highest relative pitch value has been used in the Chinese linguistic literature to transcribe tones. Consequently, uniform interpretations of tone height and contour and computer processing of the data collection are fairly straightforward. Because of their shortness, in the literature the ENTERING tones (i.e. tones occurring in checked syllables) are considered distinct from the tones occurring in open syllables even though some of them may have the same contours.

Before we discuss correlations, it is useful to examine a few facts concerning individual tones. The possible tone contours in Chinese are level, rising, falling, rising-falling, and falling-rising. As reported in Cheng (1973), in terms of the 737 tone systems falling tones have the highest incidence of occurrence, and bidirectional tones, with the complexity of both rising and falling, have the least number. Following is the detail of the occurrences of the tones:

(1) (a) Level tones occur in 651 (or 88.33%) of the 737 dialects.

(b) Rising 597 (81.00%)

(c) Falling 696 (94.43%)

(d) Rising-falling 54 (7.32%)

(e) Falling-rising 310 (42.06%)

The above figures warrant the following conclusion:

(2) Falling tones are the most widespread. The frequency of occurrence in a descending order is: falling, level, rising, falling-rising, and rising-falling.

Rising-falling tones are rare. This fact lends support to Wang's (1967) postulation that rising-falling tones are more complex than falling-rising tones.

Since my report of the fact that falling tones outnumber other tones in 1973, others have also found similar or related phenomena in various areas. Chala and Lwan (1973) reported that for a given pitch interval a subject could execute a falling pitch faster than a rising pitch. Hombert (1976) in an experiment found that the subjects, who were asked to imitate nine fundamental frequency (FO) patterns, had a greater difficulty for rising (vs. falling) and for higher (vs. lower) FO patterns. Hyman and Tadadjere (1976) states that a high "floating" tone in Mbam-inkan occurring between a falling and a low tone has a general tendency to form a falling contour with the right rather than a falling-rising contour with the left tone. Vance (1977) has noted a tendency for the impressionistically level tones to have falling FO contours in Cantonese.

Among the various contours, falling tones may involve least physiological effort in production. Generally, pitch tends to fall before pause. This fact provides a ground for Cooper and Sorensen's (1977) speculation that the fall is one by-product of a generalized relaxation response of the speech-processing mechanism as it nears completion of the processing. However, Atkinson and Brickson (1976) found an increase in strap muscle activity, particularly the sternohyoid, with low FO. Gandour (1977) speculates that the drop in FO from high to mid might be accompanied by relaxation of the cricothyroid, whereas a drop from mid to low range by increased strap activity.

Hombert's (1976) experimental results that her subjects had a greater difficulty in imitating higher (vs. lower) FO patterns should not be taken to mean that low tones would occur more frequently than high tones. Generally speaking, the high-low contrast is determined by the phonological system of the language or dialect.

However, if a tone containing a pitch level 4 or 5 is regarded as a high tone, otherwise a low tone, the Chinese data collection yields the following figures:

- (3) (a) High tones occur in 736 dialect localities.
- (b) Low tones occur in 695 dialect localities.

The following generalization can be made:

- (4) High tones are more prevalent than low tones; all the dialects except one have high tones.

The one exception is Yongming, Hunan.¹

2. TONAL CORRELATIONS. Wang (1967, 1972) in a survey of several hundred tone systems of Asia found that very few languages have more than (a) four noncontour tones, (b) two rising tones, (c) two falling tones, or (d) two complex (falling-rising or rising-falling) tones. In this section I will report on the details of the cooccurrences of tones in the 737 Chinese dialect localities.

In terms of the contours, the high-low distributions are given below:

(5) (a)	High level tones occur in 555 localities totaling 655 tones.	
	Low level	324 431
(b)	High rising	494 584
	Low rising	201 213
(c)	High falling	612 717
	Low falling	377 417
(d)	High rising-falling	48 56
	Low rising-falling	17 17
(e)	High falling-rising	93 96
	Low falling-rising	226 247

Notice that the high and low tones of a specific contour may occur in the same localities, and hence the localities may be counted twice. This is why the sum of the high and low tones occurring does not necessarily equal the figures given in (1). The above figures show:

- (6) Level, rising, falling, and rising-falling tones are often high tones; on the contrary, falling-rising tones are often low tones.

The fact that in (5) the number of individual tones is generally greater than that of localities is due to coexistence of the same type of tones. For example, some of the 555 localities have more than one high level tone, resulting in 655 tones of the same contour. The tones of Jingshan, Hubei can help clarify this point. Jingshan as surveyed by Chao et al (1948) has the following four tones (traditional tone categories being given in capitals):

(7) (a)	YIN LEVEL	55
(b)	YANG LEVEL	13
(c)	RISING	31
(d)	DEPARTING	44

Although the phonetic details are different, YIN LEVEL and DEPARTING are both high level tones.

As seen in (5), most of the tones can occur with another tone of the same type in the same dialect. The only exception is low rising-falling tones, which occur in 17 localities totaling also 17 tones. We can thus make the following statement:

- (8) No Chinese dialect has more than one low rising-falling tone.

As we examine the cooccurrences of various low tones with high tones of any contour, we also find the prevalence of high tones as in the following tabulation; each figure in the parentheses is the number of localities where the type of tone occurs, as already given in (5):

(9) (a)	Low level tones occur with high tones	
		in 323 localities (out of 324).
(b)	Low rising	200 (201)
(c)	Low falling	376 (377)
(d)	Low rising-falling	17 (17)
(e)	Low falling-rising	226 (226)

From (9d) and (9e) we arrive at the following conclusion:

- (10) If there exists a low bidirectional tone there also exists a high tone in the same dialect.

The correlation shown in (9a), (9b), and (9c) is imperfect. This fact is also shown in the occurrences of high and low tones of any contours:

(11) (a) High tones occur in 736 localities.

(b) Low tones occur in 628 localities.

(c) High and low tones coexist in 694 localities.

Again, the locality that does not have a high tone is Yongming, Hunan. A generalization can thus be made as the following:

(12) Except for one dialect locality, if there exists a low tone, there also exists a high tone; the converse is not true.

We now turn to the correlations between various contours. Of the 651 localities that have a level tone, 285 have another level tone; of the 597 localities that have a rising tone, 519 also have a level tone, etc. The entirety is given below.

(13)	Level	Rising	Falling	Rising-falling	Falling-rising
(a) Level (651)	285				
(b) Rising (597)	519	170			
(c) Falling (696)	623	560	356		
(d) Rising-falling (54)	27	54	36	19	
(e) Falling-rising (310)	273	204	296	6	32

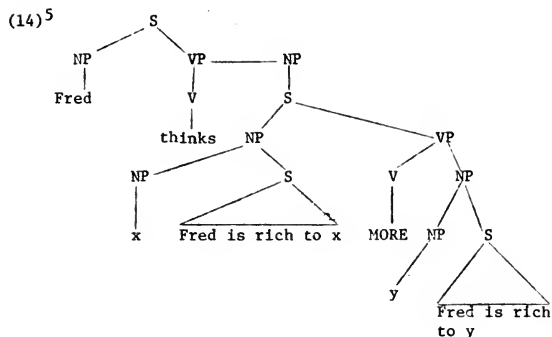
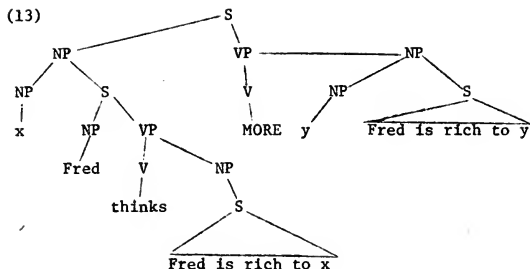
As (13d) shows, rising tones occur in all the 54 localities where rising-falling tones occur. As already given in Cheng (1973:104), such a correlation can be stated as follows:

(14) If a rising-falling tone occurs in a dialect, then a rising tone must also occur; the converse is not true.

The figures in (13) do not allow for a straightforward interpretation of the occurrences of falling-rising tones, but a careful check of all the 737 tone systems shows the following correlation:

(15) If a falling-rising tone occurs in a dialect, then at least one of level, rising, or falling tones must also occur; the converse is not true.

On the basis of the occurrences of the tones in the data collection, we can calculate the tonal correlation coefficients. The coefficients are numerical indices ranging from +1 to -1, the higher the value the better the correlation in a positive or negative direction. Following are the Pearson (moment-product) correlation coefficients between different contours; the probability of error



Trees (13) and (14) do not differ significantly from the underlying structures needed by McCawley. What does differ is the aspect of semantic structure taken to be responsible for the ambiguity of (9). According to McCawley, the contradictory reading results from the subordination of the description *y* [Fred is rich to *y*] to the verb think, while according to Postal, the contradiction results from the subordination of the comparative predicate MORE to think. The relative scope of the description and think are, in Postal's analysis, irrelevant.

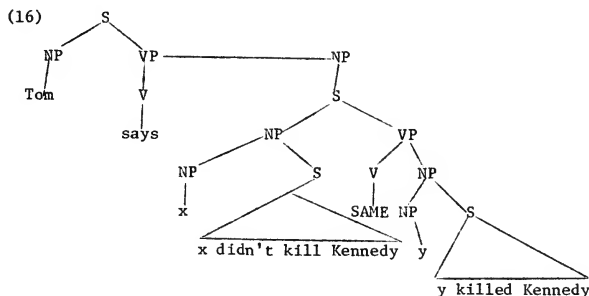
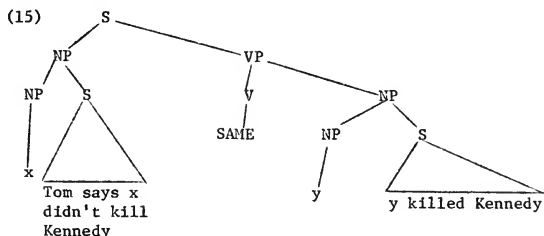
Thus, the most important differences between McCawley's and Postal's analyses are the rules interpreting the structures. Although neither Postal nor McCawley provides an explicit formal semantics for his analysis, it is clear that McCawley's and Postal's rules of semantic interpretation (in the logical useage of the term) would be sensitive to different things: McCawley's to the relative scope of a predicate and a description, and Postal's to the relative scope of two predicates.

4. Postal's Analysis of Definite Descriptions

I would like to turn now to Postal's treatment of sentences like (6).

(6) Tom says that the man who killed Kennedy didn't kill Kennedy.

Postal assimilates the ambiguity of (6) to that of (9) by proposing that (6) contains a covert predicate analogous to MORE in (9). In the case of (6), the predicate is SAME, defined by Postal as "a binary predicate expressing extensional identity. (p. 382)" On the non-contradictory reading, (6) would be represented as (15), and on the contradictory reading as (16).



Before discussing whether Postal's analysis is tenable when extended to definite descriptions (I think it is not), I would like to point out the essential role played by SAME in Postal's analysis. It will be remembered that Postal's analysis of comparatives like (9) differed from that of McCawley in that according to Postal the ambiguity derived from the relative scope of MORE and think. For McCawley MORE played no such role in the ambiguity. But both Postal and McCawley would posit an element like MORE in logical structure.

Number of tones	Level	Rising	Falling	Rising-falling	Falling-rising	Number of localities
2:	2	1	3	0	1	2
4:	2	0	0	0	2	2
6:	2	3	3	0	0	2
4:	0	2	1	0	1	2
10:	4	2	4	0	0	1
9:	1	2	4	2	0	1
7:	3	2	0	0	0	1
9:	7	2	0	0	0	1
8:	3	3	1	1	1	1
5:	2	1	1	1	2	1
5:	0	3	2	0	0	1
5:	1	3	1	1	1	1
4:	1	3	1	1	1	1
4:	1	1	3	1	1	1
4:	3	1	1	1	1	1
6:	4	1	1	1	1	1
8:	2	1	1	1	1	1
4:	2	0	1	1	2	1
4:	1	1	1	1	1	1
3:	3	3	1	1	1	1
3:	2	2	1	1	1	1
2:	3	1	1	0	1	1
1:	1	1	1	1	1	1
1:	1	2	1	1	1	1
1:	2	1	1	1	1	1
1:	3	1	1	1	1	1
1:	4	1	1	1	0	1
1:	4	1	1	1	1	1
1:	1	0	4	1	0	1
1:	3	1	1	1	1	1
1:	1	1	1	1	2	1
1:	2	1	1	1	2	1
1:	0	1	1	0	3	1
1:	1	2	1	0	2	1
1:	1	2	1	1	1	1
1:	2	2	1	1	1	1
1:	0	0	0	1	1	1
1:	1	1	3	1	1	1
1:	1	1	2	1	0	1
1:	1	3	1	1	0	1
1:	1	2	1	1	2	1
1:	3	1	1	0	1	1

Not differentiating the number of tones, the highest occurrence of combination is level, rising, and falling. Altogether there are 15 such distinct combinations:

(19)	Level	Rising	Falling	Rising- falling	Falling rising	Number of localities
(a)	+	+	+			314
(b)	+	+	+		+	159
(c)	+		+		+	94
(d)	+		+			34
(e)		+	+		+	29
(f)		+	+			22
(g)	+	+	+	+		16
(h)		+	+	+		14
(i)		+		+		13
(j)	+	+			+	10
(k)	+	+				9
(l)			+		+	8
(m)	+	+	+	+	+	6
(n)	+	+		+		5
(o)	+				+	4

3. IMPLICATIONS. Since the 737 tone systems cover extensively all of the Chinese dialect groups, the generalizations derived from them can be regarded as the characteristic nature of Chinese tone. To extend the cooccurrence statements to the languages beyond the Chinese boundaries would be a useful undertaking for investigation of language universals. On the other hand, the synchronic generalizations can facilitate historical reconstructions. That is, the generalizations can help us determine whether a reconstructed tone system is reasonable or not. I will venture to demonstrate this point in this section.

Mei (1977) has reconstructed the tonal values of 16th century Pekingese as high rising, low rising, low level, high level, and short low level (for the ENTERING tone). He has arrived at this conclusion through the following reasoning. Firstly, he cites Rokuro Kono's (1951) view that according to Xunmin Zhengyin Yanjie (Hwunmin Chengum Enhay, in Korean) written in the 16th century, Middle Korean had the following tones, excluding the ENTERING tone for checked syllables:

- | | | | |
|------|-----|-----------|-----------------|
| (20) | (a) | LEVEL | 11 (low level) |
| | (b) | RISING | 15 (low rising) |
| | (c) | DEPARTING | 55 (high level) |

Secondly, 16th century Pekingese tones were described in some Korean texts. Cui Shi-Zhen (Choy Sey-Cin), a 16th century Korean scholar, appended the "General Principles" of Chinese pronunciation to the Leocida Yanjie and the Putongshi Yanjie, which had been written earlier. Mei (1977:238) has translated the description of the Chinese tones in the "Principles" as follows: (Here for clarity the traditional categories are given in capitals.)

- (21) The unvoiced variety of the LEVEL tone, whether aspirated or unaspirated, is lightly pronounced, with a faint rise; it is like the Korean DEPARTING tone. The voiced variety, including those with nasal or lateral initials, is low in the beginning, accented in the middle, strident and slow at the end; it is like the Korean RISING tone. The RISING tone is low and stable, like the Korean LEVEL tone. The DEPARTING tone is level and high, identical with the Korean DEPARTING tone. The ENTERING tone is pronounced like the voiced variety of the LEVEL tone, but more abrupt.

The philological evidence is very convincing, indeed. Mei has thus reconstructed the tone values of 16th century Pekingese as follows:

- | | | | |
|------|-----|------------|---------------------|
| (22) | (a) | YIN LEVEL | 35 (high rising) |
| | (b) | YANG LEVEL | 13 (low rising) |
| | (c) | RISING | 22 (low level) |
| | (d) | DEPARTING | 55 (high level) |
| | (e) | ENTERING | 2 (short low level) |

The reconstructed tone system has three level and two rising tones. However, there is no such a tone system in our data collection. One would naturally question the plausibility of the reconstructed values. Mei himself also discusses the plausibility. He cites my observation (Cheng 1975) that the most frequent contour is that of falling both for modern Chinese dialects as a whole and for northern Mandarin. He states that it seems attractive to change the value of the 16th century DEPARTING tone from 55 to 53 (or the modern value 51) and thereby make the total system more plausible. Then he rejects this suggestion on the ground that the DEPARTING tone was higher than the YIN LEVEL tone as described in Jin Mi-Se's (Trigault) work Xiru anpu published in 1625. Mei (1977:243)

has translated the relevant passage as follows:

- (23) There are two LEVEL tones, YIN and YANG; and three Oblique tones, RISING, DEPARTING, and ENTERING. These five differ with respect to pitch height. The YIN LEVEL is neither high nor low, and occupies a position in the middle of the other four. Two are above it, and two below. The highest is the DEPARTING tone. The second highest is the ENTERING tone. The lowest is the YANG LEVEL tone. The second lowest is the RISING tone.

He first remarks that the ENTERING tone seemed to have floated up. Then he goes on to give the following argument (1977:243):

- (24) Trigault's ranking bears upon our problem in the following way. First, if the DEPARTING tone was a high falling tone, say, with a value of 53, then it could not be so clearly considered to be higher than the YIN LEVEL tone (high-rising 35), which Trigault did. Therefore instead of revising the value of the DEPARTING tone from 55 to 53, we will consider such a shift as an event that actually took place after the early 17th century.

The shift that he postulates in order to explain the modern value is never substantiated in the paper. As the falling contour is the most prevalent in modern dialects, I feel that a falling contour instead of high level is a better reconstruction of the 16th century Pekingese DEPARTING tone. To accept what Mei rejects, I will need to show that (a) Mei's interpretation of Trigault is not entirely adequate and (b) the Middle Korean DEPARTING tone may have been a falling pitch.

Trigault's description did not really give the entire shape of the tones; contours were not mentioned. If it were taken as a detailed description of the tonal values of the time, then there would have been five level tones in 16th century Pekingese. Mei's view that a falling value of 53 could not be so clearly considered to be higher than 35 seems to have ruled out the possibility that Trigault was describing the values in terms of the beginning pitch. Even in modern Pekingese, or standard Putonghua, the DEPARTING tone, which is usually given as 51, actually starts higher than the modern YIN LEVEL tone, 55. This fact is often slighted or ignored in the literature. For example, Dreher and Lee (1966:16) conclude from their experimental study of modern Pekingese that the YIN LEVEL and DEPARTING tones begin at statistically the same level; yet, the beginning of the DEPARTING tone in their summary graph is plotted at a point higher than that of the YIN LEVEL tone. Howie (1976:220) also plots the beginning of the DEPARTING tone higher than that of the YIN LEVEL tone. My own results of an experimental study of these two tones also show that the highest pitch of the DEPARTING tone on average (198,283 Hz) is higher than that of the

YIN LEVEL tone (182.765 Hz).² It is therefore appropriate to consider 55 to be higher than 35, especially when the onset pitch is taken to be the focal point.

The above discussion only shows that Triguault's description is not a compelling piece of evidence for reconstructing 55 for the 16th century Pekingese *LiKangLiNG* tone. The identification of the Peking *LiKangLiNG* tone with the Middle Korean *LiKangLiNG* tone in the 16th century Korean texts is the most essential philological information for reconstruction. The Middle Korean *LiKangLiNG* tone has been considered a high level tone by some scholars. However, others have taken a different view. For example, Hayata (1974) and Ramsey (1975) show that Middle Korean and modern Hamkyong and Kyengsang Korean dialects are pitch-accent languages like Japanese rather than a true tone language like Chinese, and that the tone marks in Middle Korean texts indicated the positions of high or low pitch-accent rather than tone. Moreover, in the South Hamkyong dialect, according to Ramsey (1975:173), if the last mora in a phrase is high pitched and followed by a pause, the pitch falls through the end of that mora. Lee (1977:23) translates the description of the *LiKangLiNG* tone "zhi er gao" in Chinese characters as "level and high". Ramsey (1975), however, renders the same phrase, which also appears in *Hwanghae*, more literally as "straight and high". "Straight" may very well mean falling. Ramsey also cites Leysard's (1967) translation of Middle Korean *Seunggi* *Jeonggi* *Seunggi* that "the *LiKangLiNG* tone is raised yet strong". "Strong" may have indicated a falling contour. In the light of the re-analysis of modern Korean dialects and Middle Korean tone, the 16th century Pekingese *LiKangLiNG* tone, which was equated with the Middle Korean *LiKangLiNG* tone, may now seem a high falling tone.

With such a revision of Lee's important contribution, 16th century Pekingese is now considered to have the following tones:

- | | | | |
|-----|-----|------------|---------------------|
| (a) | (4) | YIN LEVEL | 35 (high rising) |
| | (b) | YIN LEVEL | 13 (low rising) |
| | (c) | LiKangLiNG | 22 (low level) |
| | (d) | LiKangLiNG | 53 (high falling) |
| | (e) | LiKangLiNG | 2 (short low level) |

As was already shown in (12), this tone system (2 level, 2 rising, and 1 falling tones) is the most wide-spread system among the modern dialects which have 5 tones.

In conclusion, the quantitative study of the Chinese dialect tones has allowed us to see the general tendencies, if not language universals, of tonal correlations. The generalizations can help us

delimit possible tonal combinations and hence help us determine the plausibility of historical reconstructions.

NOTES

* An earlier version of this paper was presented at the Tenth International Conference on Sino-Tibetan Languages and Linguistics at Georgetown University, October 14-16, 1977.

¹ According to Yang (1957), the Yongming dialect has the following tones:

(a) YIN LEVEL	33
(b) YANG LEVEL	31
(c) RISING	31
(d) DEPARTING	13
(e) ENTERING	22

All the tones in this dialect are low according to our high-low definition. The YANG LEVEL and RISING are identical. Yang (1957) lists this dialect as a 5-tone dialect but does not provide any explanation for establishing two distinct categories for the same low falling tone.

² In the experiment one subject pronounced 29 pairs of Putonghua YIN LEVEL and DEPARTING tone words with various initial consonants. A pitch extractor sampled the voice once every 5 milliseconds and sent through an interface the count of time interval between two wave peaks to the PLATO computer system for conversion to fundamental frequency and for graphic display of the contour. The pitch extractor device was designed and constructed by Jean-Pierre Bijon at the University of Illinois, Urbana-Champaign.

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CORRELATION AMONG ATTITUDINAL FACTORS, SPEED
AND TONE SANDHI IN CHINESE*

Yen Ling Lee

This paper investigates the role that attitudinal factors and speed play in the tone sandhi process in Chinese. Sixteen sentences consisting of all third tone words in different lengths (ranging from five to twelve syllables) were read in seven different artificially induced moods and two different speeds by seven subjects. It is found that speed does affect tone sandhi and that attitudinal factors are also related to tone sandhi process because they are found to form clear speed divisions. The mean syllable durations for different tone sandhi patterns show convincingly that faster speeds trigger larger phonological phrases predicted by the surface structure causing more tone sandhi to occur and that faster speeds also influence the relative position of tone sandhi occurrence.

I. INTRODUCTION

Mandarin Chinese has the following four basic tones: 1- (ˊ) high level, 2- (ˋ) high rising, 3- (ˊˋ) low falling and rising, and 4- (ˋˊ) high falling; plus a neutral tone derived from the four tones. Among these tones, the third tone is the longest in duration and the most diverse in shape subject to the influence of its tonal environments. (Dreher and Lee, 1968; Wang and Li, 1967)

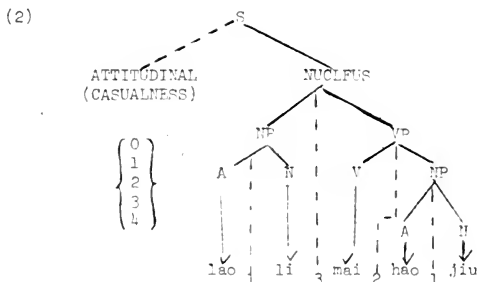
It is well known that in a sequence of two third tones, the pitch contour of the first third tone is changed to a rising contour similar to that of the second tone. In their study of the third tone, Wang and Li (1967) have shown that the rising tone derived from application of the third tone sandhi cannot be distinguished from the basic second tone. Therefore, the derived rising tone will henceforth be treated the same as the second tone.

The interest here lies in the behavior of the third tone sandhi when a sequence of more than two third tones is encountered. Cheng (1970, 1973) has observed five possibilities for sentence (1), which consists of a sequence of five third tones:

- (1) lǎo lǐ mǎi hǎo jiǔ
'Old Li buys good wine.'
- | | | | | | |
|-----|---|---|---|---|---|
| (a) | / | ✓ | ✓ | ✓ | ✓ |
| (b) | / | / | ✓ | / | ✓ |
| (c) | / | ✓ | / | / | ✓ |
| (d) | / | / | / | / | ✓ |
| (e) | / | - | - | - | ✓ |

The high level tones in (e) are derived from an application of tone sandhi in Chinese which changes the second tone (in (d)) to high level tone. Cheng states that all five patterns above are possible in actual speech but the choice of its realization depends on attitudinal factors such as speed of speech and casualness of the speaker.

The different possibilities of tone sandhi rule application are results of the different size of the phonological phrase corresponding to the surface structure groupings. The sentence above would have the following structure where the number under each node indicates the level of depth in the surface structure:



Cheng states that the size of the phonological phrase corresponds to the depth of the surface structure and is determined by speed and degree of casualness of the speaker. Each successive phonological phrase involves more structural nodes and reflects a distinct degree of casualness. The level '1' in (2) would represent the smallest phonological phrase (i.e. the NP's) to which tone sandhi applies while level '2' would represent applying the rule to the VP dominating the NP as one phonological phrase. And level '3' would include the whole sentence as the phonological phrase while level '0' would mean the non-application of the tone sandhi rule.

While the above claim is intuitively sound, it is not clear how speed is partitioned with respect to tone sandhi and whether other attitudinal factors are also involved. The purpose of this study is to establish some of the attitudinal factors involved in addition to speed and what level of tone sandhi they represent. Through the study of sentences of different lengths and structures, read in different manners and speeds, within a limited sampling of speakers, I hope to establish the relation among attitudinal factors, speed and the third tone sandhi, in more concrete terms, such as the length of syllable duration for each tone sandhi pattern.

II. PROCEDURE

(A) SUBJECTS. Seven subjects were selected from among graduate

students at the University of Illinois who have Mandarin Chinese as their primary language. Subjects ranged in age from 24 to 30 years old. Six were females and one, male. This imbalance is based on an assumption that females are in general less inhibited in display of emotion, an important ingredient to this experiment.

(B) DESIGN. Sixteen sentences labeled A-P as shown in Appendix I whose constituents are all third tone words were constructed with length ranging from 5 to 12 syllables. Grammatical structures varied within this set, including declarative, imperative, and those containing subordinate structures. Some sentences vary only slightly so that we can see what a slight change in meaning and/or sentence construction would affect tone sandhi application. Sentences were written on sixteen coded index cards in a purposeful intermixing of short and long sentences. A situation was then told to the subject to build a certain mood. The subject was then asked to read through the full set of sentences in what they considered to be their most natural manner in that mood. This step was repeated once for each mood. Reading sentence by sentence through the range of emotions would require too much of the speaker who might fall into a set pattern of tone sandhi not really natural to her/him; and this was purposefully avoided. For each sentence, the context of use was modified to suit the contents of that particular sentence. For example:

- | | |
|--------------------------|---------------------------------------|
| (1) lao li mai hao jiu. | angry: You are broke but your spouse |
| 'Old Li buys good wine.' | still wants to buy good wine. |
| | happy: As a guest, you find that your |
| | host wants to buy your favorite |
| | wine. |

The most representative emotions were chosen: happy, sad, angry, disgusted. They are also easy to assume. Sentences were spoken in each emotion in two speeds: natural and fast. These three categories were also chosen and spoken in one speed only: neutral, fast and meticulous. In total, each subject spoke 176 sentences.

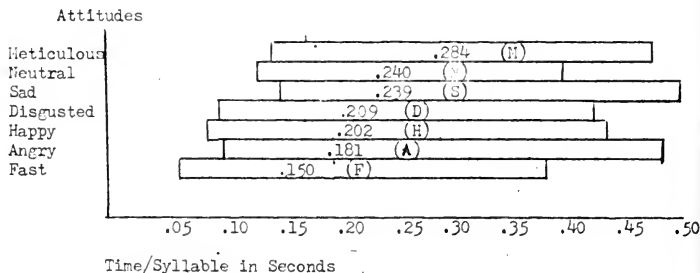
The experiment was conducted in an informal conversational setting, to reduce tension and self-consciousness. Subjects were not told of the purpose of the experiment. A typical session ran from 45 to 60 minutes. A high quality cassette tape recorder was used at each session, with results being transcribed in tonal marks. The duration of each utterance was then timed to thousandth-of-a-second degree with the help of a PLATO computer program. The accuracy is of course not reliable to that level given that (a) PLATO is an interactive system and as it also serves others on the system, it may delay the required response for a fraction of a second; and (b) the start and stop of each sentence was signaled to PLATO by pressing a key and thus was subject to human reaction time error. However, assuming a consistent human reaction time error, we can accept the validity of these times as relative times. In all, 1232 spoken sentences were processed in this manner. For graphing purposes, mean duration of each syllable was also calculated (still accurate in relative sense).

III. ANALYSIS OF THE RESULTS

Our basic goal is to experimentally establish the relation between speed and tone sandhi and the role, if any, that different attitudinal factors play in the tone sandhi process. The first half of the analysis consists of grouping the attitudinal factors according to speed. And on the other hand, we try to see if tone sandhi is indeed a function of speed. If so, since attitudinal factors can be classified according to speed, they should affect tone sandhi in a similar way as tempo alone does. The second half of the analysis consists of pinning down how speed affects tone sandhi; what speed triggers the forming of a larger phonological phrase according to the surface structure and whether syntactic structure alone provides input to the tone sandhi process. Using sentences A (lǎo lǐ mǎi hǎo jiǔ), E (lǎo lǐ xiāng mǎi hǎo jiǔ), and P (lǎo lǐ bǐ xiǎo lǐ aī liǎng chǐ), we try to see if there is any general pattern in the occurrence of tone sandhi with various speeds.

In order to see how attitudinal factors can be classified according to speed, the mean speed of all the sixteen sentences spoken by all the subjects in different manners were calculated and shown in Table I.

Table I
Mean Syllable Duration in Seconds of All Sentences
by All Speakers in Different Attitudes



Each bar indicates the range for each attitude. The number inside the bar indicates the mean speed of all the sentences spoken by all the subjects in that particular manner. Although the category 'fast' seems to be independent from other attitudinal categories, since it covers a speed range generally faster than others, it is included here and hereafter to serve as a comparison with the other categories. From Table I, we can draw two observations. Firstly, the duration can be ordered as meticulous (M) > neutral (N) > sad (S) > disgusted (D) > happy (H) > angry (A) > fast (F) with M being the slowest and F the fastest in speed. Secondly, there are clear-cut speed classes of (M), (N, S), (D, H, A), (F) in terms of the mean speed.

Now we turn to the tone sandhi patterns observed in the use of different attitudes and different speeds. If we can establish that tone sandhi is indeed a function of speed, then we can prove that different attitudes affect tone sandhi in a similar way since we have already established above that they can be classified consistently according to speed. Graph Ia represents the sorting of sentence A (lǎo lǐ mǎi hào jiù) according to the tone sandhi patterns along the vertical axis and the seven attitudes along the horizontal axis. The numbers on the graph indicate subjects who spoke that particular pattern (1=subject one).

Graph Ia
Attitudes and Corresponding Tone Sandhi
Patterns by All Speakers
for Sentence A

Tone Sandhi Patterns								Attitudes
I. /✓✓✓✓	1,2,3 4,5,6 7	5,3 6	1,4 3	1,3 5,7	3,5 7	4		
Ia. //✓✓✓		1,7 2	2,5 6,7		1,2 6	1,2,3 5,7	1,2,3,7 4,5,6,7	
II. /✓✓✓✓		4		2,4	4	6		
III. ///✓✓				6				
	N	N	S	D	H	A	F	

M-meticulous, N-neutral, S-sad, D-disgusted, H-happy
A-angry, F-fast.

Graph Ib
Attitudes (in Fast Speed) and Corresponding Tone Sandhi
Patterns by All Speakers for Sentence A

Patterns					Attitudes
I. /✓✓✓✓	4	2	4		
Ia. //✓✓✓	1,2,3 5,6,7	1,3,5 6,7	1,2,3 5,7	1,2,3 5,7	
II. /✓✓✓✓		4		4	
III. ///✓✓			6	6	
	S	D	H	A	

S-sad, D-Disgusted, H-happy, A-angry

Since the subjects were asked to read two speeds in each of the four selected emotions: anger, disgust, happy and sad, Graph Ib represents the four emotions readings in a very speedy delivery of sentence A by all the subjects. Comparison of Graph Ia with Graph Ib indicates that within any given emotion, speed does cause the subject number points to shift down the tone sandhi axis showing that increased speed incurs increased tone sandhi. We have established that tone sandhi is a function of speed and that attitudes and emotions can be classified according to speed. Tone sandhi is thus related to attitudinal factors.

To further support the above position, we observe in Graph Ia that attitudes can be classified roughly according to the tone sandhi patterns as (H), (N, S, D, H, A) and (F). All the subjects spoke only one tone sandhi pattern in H, another pattern in F and diverse patterns in N, S, D, H and A. Looking back at Table I we find that H is in a speed class by itself, so is F, thus matching closely with the tone sandhi patterns. Therefore, the position that there exists certain correlation between attitudes, speed and tone sandhi patterns is further verified.

Now we will concentrate on the study of tone sandhi with respect to speed. Through calculating the mean speed (in time/syllable) of each tone sandhi pattern of a given sentence, we hope to further substantiate the claim that tone sandhi is a function of speed with faster speed implying more tone sandhis. Tables II, III, IV show the mean syllable duration of sentences A (lǎo lǐ mǎi hào jiǔ), B (lǎo lǐ xiāng mǎi hào jiǔ) and C (lǎo lǐ bì xiǎo lǐ āi liáng chí) respectively. In addition to the mean, the number of speakers who used that particular tone sandhi pattern, the number of its occurrences, and the percentage of number of occurrences against the total number of utterances (77 sentences) are also shown.

Table II
Syllable Duration in Seconds of the Sentence
lǎo lǐ mǎi hào jiǔ

T.S. Patterns	Mean	Standard Deviation	#S	#O	% of Occurrences
I. / ✓ ✓ / ✓	0.271	0.0949	7	25	32.5 %
1a. // ✓ / ✓	0.170	0.0235	6	42	54.5 %
II. / ✓ // / ✓	0.193	0.0229	3	7	9.1 %
III. // // / ✓	0.129	-	1	3	3.9 %

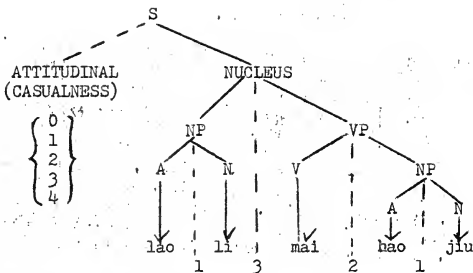
T.S.- tone sandhi, S-subjects, #S- number of subjects,
#O- number of occurrences

The surface structure of sentence A (lǎo lǐ mǎi hào jiǔ) and its five possible tonal patterns were already given in (1) and (2) in the Introduction Section and are now repeated below:

(1) $\check{\text{l}}\check{\text{a}}\check{\text{o}}$ $\check{\text{l}}\check{\text{i}}$ $\check{\text{m}}\check{\text{a}}\check{\text{i}}$ $\check{\text{h}}\check{\text{a}}\check{\text{o}}$ $\check{\text{j}}\check{\text{i}}\check{\text{u}}$
 'Old Li buys good wine.'

(a) / ✓ ✓ / ✓
 (b) / / ✓ / ✓
 (c) / ✓ / / ✓
 (d) / / / / ✓
 (e) / - - - ✓

(2)



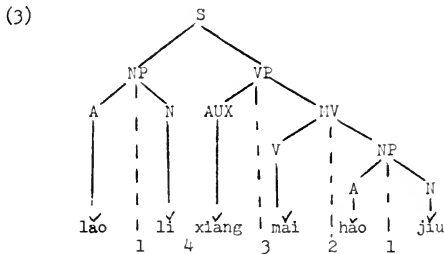
As stated before, the number under each structural node in (2) indicates the depth of the surface structure. Cheng (1970, 1973) suggests that the depth of the surface structure coincides with the size of the phonological phrase to which the tone sandhi rule applies. Thus, level '1' implies the smallest phonological phrase including only the NP's. Level '2' implies that the VP with the NP dominated by it provides the input to the tone sandhi rule. And level '3' includes the whole tree to be the phonological phrase. Cheng states that the size of the phonological phrase is determined by speed and degree of casualness of the speaker. Comparing Table II with (1), we notice there is a clear increase of speed with corresponding tone sandhi patterns: the duration of pattern IIP (0.129 sec/syllable) is shorter than that of pattern II (0.193 sec/syllable) which is in turn shorter than that of pattern I (0.271 sec/syllable). This result verifies Cheng's claim that speed affects the size of the phonological phrase determined by the surface structure. The faster the speed, the larger the phonological phrase becomes.

However, pattern Ia (//✓✓✓) would imply $\check{\text{l}}\check{\text{a}}\check{\text{o}}$ $\check{\text{l}}\check{\text{i}}$ $\check{\text{m}}\check{\text{a}}\check{\text{i}}$ to be a phonological phrase and thus deviates from the posited surface structure. Cheng (1970) rejects the explanation that certain attitudinal factor may have caused the rearrangement of the surface structure. Instead, he posits the explanation that if the output of the tone sandhi rule application still contains a sequence of two third tones, the rule is reapplied, optionally in the middle of the sentence, and obligatorily at the beginning or end of the sentence. Therefore, pattern Ia in Table II is actually derived from pattern I. To check if this is indeed the case, we first check if there are any attitudinal factors which are particular to this tone sandhi pattern. If so, then we can indeed say, due to certain attitudinal factors, the surface structure is rearranged resulting an unexpected phonological phrase. However, Graphs Ia, Ib show that this tone sandhi pattern is distributed among different

attitudes (S, N, H, A, F and D) quite evenly thus excluding the possibility that certain attitudes may have triggered the rearrangement of surface structure. Moreover, as Cheng argues quite convincingly, there seems to be no other motivation for the rearrangement of the surface structure except to explain the unexpected tone sandhi patterns; therefore, it is rather an ad-hoc device created only for this use. Rule reapplication, on the other hand, is found more frequently. Therefore, the position that tone sandhi can re-apply to its output is preferred here.

From Table II, three more observations can be made. Firstly, pattern Ia which is a derivative of pattern I, is not only faster than pattern I, it is even faster than the second level of tone sandhi predicted by the surface structure. Secondly, comparing Ia and II, ($//\checkmark/\checkmark$ and $/\checkmark//\checkmark$), we find that for a given sentence, disregarding the surface structure groupings, for the same number of tone sandhi occurrences, the faster speed induces tone sandhi earlier in the sentence. Thirdly, comparing Table II with (1), we notice that within our sample population, only four tone sandhi patterns were observed, with (1e) missing. It should be kept in mind that the missing pattern here and later in other sentences do not imply that the pattern is ungrammatical. It is only not present in our sample population.

In order to see if the above observations would generalize with longer sentences, we examine sentences E and O given in Table III and IV. Sentence E has the following surface structure and possible tone sandhi patterns according to the surface structure:



- (4) lǎo lǐ xiǎng mǎi hǎo jiǔ
 'Old Li wants to buy good wine.'
- | | | | | | | |
|-----|---|---|---|---|---|---|
| (a) | / | ✓ | ✓ | ✓ | ✓ | ✓ |
| (b) | / | ✓ | ✓ | ✓ | / | ✓ |
| (c) | / | ✓ | / | / | / | ✓ |
| (d) | / | / | / | / | / | ✓ |
| (e) | / | - | - | - | - | ✓ |

Comparing (4a - e) with Table III, we find that (4b) is missing and there are four new patterns: pattern Ia ($//\checkmark/\checkmark/\checkmark$), Ib ($//\checkmark/\checkmark/\checkmark$), Ic ($//\checkmark/\checkmark/\checkmark$) and IIa ($//\checkmark/\checkmark/\checkmark$). Again since there is no real motivation for rearranging the surface structure (these patterns are evenly distributed in

different attitudes), we regard them as a result of tone sandhi reapplication. This position is well motivated since pattern I (i.e. 4a) contains a sequence of three third tones and (//✓✓✓✓) (i.e. 4b) which is non-existent in our sample population contains a sequence of two third tones. Thus we regard Ia and Ib as derived from pattern I (//✓✓✓✓) and Ic (//✓✓✓✓) as derived from pattern Ib (//✓✓✓✓) since Ib still contains a sequence of two third tones. And IIa (//✓✓✓✓) is derived from (//✓✓✓✓) (i.e. 4b) even though it does not occur in our sample population.

Table III
Syllable Duration in Seconds of the Sentence
lǎo lǐ xiàng mǎi hǎo jiǔ

T.S. Patterns	Mean	Standard Deviation	#S	#0	% of Occurrences
I. //✓✓✓✓✓	0.286	-	1	1	1.3 %
Ia //✓✓✓✓✓	0.216	0.0226	7	50	64.9 %
Ib.//✓✓✓✓✓	0.185	0.0477	2	8	10.4 %
Ic.//✓✓✓✓✓	0.152	0.0143	5	11	14.3 %
IIa.//✓✓✓✓✓	0.165	-	1	1	1.3 %
III.//✓✓✓✓✓	0.149	0.0209	4	5	6.5 %
IV.//✓✓✓✓✓	0.090	-	1	1	1.3 %

T.S. - tone sandhi, S-subjects, #S-number of subjects, #0-number of occurrences.

Although we find the fastest pattern (//---✓) (i.e. 4e) is again missing, the four levels found in Table III dictated by the surface structure do increase in speed thus again verifying the claim that the speed determines the size of the phonological phrase. Here we cannot compare the speed of the tone sandhi pattern derived from the output of tone sandhi rule (namely Ia, b, c) with the speed of the immediate following tone sandhi level (II) as we did in the case of sentence A because the second level of tone sandhi dictated by the surface structure is missing. However, interestingly enough, with the same number of tone sandhi occurrences in a given sentence, disregarding the surface structure grouping, faster speeds cause tone sandhi earlier in the sentence. Indeed, Ib was spoken faster than Ia (//✓✓✓✓✓ vs. //✓✓✓✓✓) and Ic was spoken faster than IIa (//✓✓✓✓✓ vs. //✓✓✓✓✓). One inconsistency seems to lie in pattern III (//✓✓✓✓✓) which has tone sandhi occurring later in the sentence than Ic (//✓✓✓✓✓) and yet has faster speed than Ic. However, the two speeds are close enough (0.149 sec/syllable vs. 0.152 sec/syllable) so as not to invalidate our general picture. Moreover, it may be taken into consideration that III (//✓✓✓✓✓) is two levels higher than Ic (//✓✓✓✓✓) according to the surface

structure grouping, thus may be inherently caused by a speed much faster than that of level I. But as reflected in the position of tone sandhi occurrences (Ic earlier than III), the syllable speed for pattern Ic is almost as fast as that of pattern III.

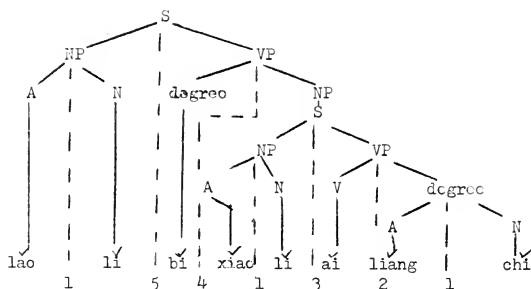
Table IV
Syllable Duration in Seconds of the Sentence 0
lǎo lǐ bǐ xiǎo lǐ āi liǎng chǐ

T.S. Patterns	Mean	Standard Deviation	#S	#O	% of Occurrences
I. / ✓ ✓ / ✓ ✓ / ✓	0.240	0.0336	7	31	40.3 %
Ia. / ✓ ✓ / ✓ / ✓	0.171	0.0265	4	11	14.3 %
Ib. / ✓ / ✓ ✓ / ✓	0.169	0.0198	6	10	13.0 %
Ic. / ✓ / ✓ ✓ / ✓	0.168	0.0556	4	6	7.8 %
Id. / ✓ / ✓ / ✓ / ✓	0.145	0.0373	3	10	13.0 %
II. / ✓ ✓ / ✓ / ✓ / ✓	0.183	0.0557	4	7	9.1 %
III. / ✓ / ✓ / ✓ / ✓	0.097	-	1	1	1.3 %
IV. / / / / / ✓	0.115	-	1	1	1.3 %

T.S.-tone sandhi, #S-number of subjects, #O-number of occurrences

Sentence 0 has the following surface structure and possible tone sandhi patterns according to the surface structure:

(5)



(6) lǎo lǐ bǐ xiǎo lǐ āi liǎng chǐ

(a) 'Old Li is shorter than Little Li by two feet'

(a) / ✓ ✓ / ✓ ✓ / ✓ ✓

(b)	/	✓	✓	✓	/	/	✓
(c)	/	✓	✓	/	/	/	✓
(d)	/	✓	/	/	/	/	✓
(e)	/	/	/	/	/	/	✓
(f)	/	-	-	-	-	-	✓

Table IV again represents a fairly close match with the patterns determined by the surface structure except that (6c) and (6f) are missing in our sample population. The extra patterns Ia-Ic are derived from pattern I (i.e. 6a). Again, the observations obtained from Tables III and II still hold true here. Firstly, the size of the phonological phrase to which tone sandhi applies increases with speed. Although pattern III is slightly faster than IV by 0.018 sec/syllable, since both occur only once with only one subject, the result should be regarded with some reservation. Secondly, just as in the case of sentence A, the speeds which cause the tone sandhi reapplication (patterns Ib-Ic) is faster than the following level of tone sandhi pattern determined by the surface structure grouping. (pattern II in this case). Thirdly, also as in the case of sentence A, E, disregarding the surface structure, for a given sentence having the same number of tone sandhi occurrences, a faster speed would induce tone sandhi earlier in the sentence. Thus Ia (/vvvvvvv) is caused by a faster speed than that of pattern II (/vvvvvv) and Ib (/vvvvvv) is caused by a faster speed than that of Ia (/vvvvvv). In the case of Ic (/vvvvvv), it is slightly faster than Ib by 0.001sec/syllable even though Ib has tone sandhi occurring earlier in the sentence (second syllable vs. third syllable). However, again the discrepancy is small enough so as not to invalidate our general conclusion.

Examining Tables II, III and IV, we can make some other general remarks with respect to the occurrences of tone sandhi patterns. For sentence A lǎo lì mǎi hào jiǔ, two tone sandhi patterns are favored: (/vvv/) (54.5 %) and (/vvvv/) (32.5 %). For sentence E lǎo lì xiàng mǎi hào jiǔ, the pattern (/vvvv/) (64.9 %) is favored. For sentence O lǎo lì bǐ xiǎo lì ai liàng chī, the pattern (/vvvvvvv) is more favored (40.3 %). The percentage of occurrences for other patterns is comparatively small indicating that overall, the majority of the subjects favors one or two types of tone sandhi patterns. Also the tone sandhi patterns induced by faster speeds (i.e. levels III and IV) occur more rarely in our experimental setting.

IV. CONCLUSION

Through the experiment, we have shown that speeds do affect tone sandhi. We have also seen that other attitudinal factors play a role in the tone sandhi process since they can be classified according to speed. And there is a certain correlation between the tone sandhi patterns governed by different attitudes and the speed classes which these attitudes fall under. Specifically, we have examined how speed affects tone sandhi. Different speeds do correspond to different sizes of the phonological phrase predicted by the surface structure with the faster speed triggering a larger phonological phrase. Moreover, the reapplication of tone sandhi when the output contains a sequence of third tones, and the relatively early occurrence of

tone sandhi in sentences with the same number of tone sandhi occurrences are also found to be caused by faster speeds.

NOTES

* I would like to thank Professor Chin-Chuan Cheng for his patient guidance over the course of this paper and for his writing the PLATO timing program which added a great deal of accuracy and subtracted a tremendous amount of time in tabulating the timing data.

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APPENDIX I

List of test sentences with all third tone words
(in Pin Yin romanization)

- A. lǎo lǐ mǎi hǎo jiǔ.
'Old Li buys good wine.'
- B. lǎo lǐ zǒng xiǎng mǎi hǎo liǎng tǒng jiǔ, gǎn jīn zǒu.
'Old Li always wants to finish buying two barrels of wine and leaves in a hurry.'
- C. qǐng nǐ bǎ zhǐ bǐ zhēng lǐ hǎo.
'Please tidy up the paper and pencil.'
- D. lǎo lǐ bǐ xiǎo lǐ āi hǎo jǐ chǐ.
'Old Li is shorter than Little Li by quite a few feet.'
- E. lǎo lǐ xiǎng mǎi hǎo jiǔ.
'Old Li wants to buy good wine.'
- F. xiǎng gǎi xuǎn nǚ zhǔ jiǎo ? qí yǒu cí lǐ.
'Thinking of changing the main actress? Ridiculous!'
- G. lǎo lǐ mǎi hǎo jiǔ, (jiù zǒu).
'As soon as Old Li finishes buying the wine, he leaves.'

- H. háo qiǎo, wǒ xiǎng zǎo qǐ, nǐ yě xiǎng zǎo qǐ.
'What a coincidence! I want to get up early, you also want to get up early.'
- I. lǎo lǐ xiǎng mǎi hǎo jiǔ, gǎn jìn zǒu.
'Old Li wants to finish buying the wine and leaves.'
- J. wǒ guǎn mǎi mǐ yě guǎn mǎi jiǔ.
'I'm in charge of buying rice as well as buying wine.'
- K. qǐng nǐ gēi wǒ guēn.
'Please get out of here.'
- L. jiā shǐ nǐ yǒu dǎn, nǐ mǎi liáng tǒng jiǔ.
'If you have the guts, you buy two barrels of wine.'
- M. xiǎo kǔng hěn shǎo xǐ liǎn.
Little Kung very rarely washes his face.'
- N. lǎo lǐ zǒng xiǎng mǎi liáng tǒng hǎo jiǔ.
'Old Li always wants to buy two barrels of good wine.'
- O. lǎo lǐ bǐ xiǎo lǐ āi liáng chǐ.
'Old Li is shorter than Little Li by two feet.'
- P. qǐng nǐ gǎn jìn gēi wǒ guēn.
'Please get out of here right away.'

PERFECT LE:
TEMPORAL SPECIFICATION IN MANDARIN CHINESE

John S. Rohsenow

The present paper¹ reanalyzes the so-called perfective aspect suffix le in Mandarin as a marker of both perfective aspect and relative anteriority, similar to the English Perfect. This analysis further identifies the surface Perfect marker le as well as its negative counterpart mei-you as both being surface reflexes of the co-occurrence of the underlying universal atomic predicate COME ABOUT (which accounts for perfective aspect) acting in conjunction with a commanding instance of the universal existential predicate, rendered here as YOU.

1. In Rohsenow (1976), the time beings of Mandarin is analyzed in terms of the theory of temporal specification originally proposed by the philosopher Hans Reichenbach (1947), and more recently developed by C. Smith (1976b).

The scheme of time specification originally suggested by Reichenbach (1947:287-298) involves three notions of time: Speech Time, Reference Time, and Event Time. For an sentence, Speech Time (hereafter to be referred to as ST) is the moment of utterance of that sentence. Event Time (ET) is the moment at which the state or event in question occurs, which need not be the same as ST. Reference Time (RT), on the other hand, is the time specified by the sentence, which may also be different from both ST and/or ET. All three referents are needed, because ST, RT, and ET need not necessarily coincide.

As Smith (1976b) notes, to understand the full temporal specification of a sentence, one must know the values of ST, RT, and ET as well as how they are related or ordered with respect to one another, the only two possible ordering relations being simultaneity or sequence. (Cf. Bull (1960: 8)) Thus RT may be simultaneous with, or sequential to (i.e., either anterior or posterior to), ST, and similarly ET may be simultaneous with or sequential (anterior or posterior) to RT.

ST, the moment of utterance, is obviously the one clearly defined point in the system. Bull's universal "prime axis of orientation" (1960: 27). When RT is simultaneous with ST, RT indicates "Present time" when RT is temporally anterior to ST, it refers to "Past time", and when RT is temporally posterior to ST, "Future time" is indicated. Note that "time" as used here (i.e., the general reference plane of reference time as oriented to ST) refers to actual time orientation and not to the names of syntactic "tenses" in any one particular language. Thus to say of a sentence that it specifies Future time means that the general reference plane given by RT for the state or event in question is located after ST, the moment of utterance.

In addition, the actual occurrence of the state or event described by the sentence may also be described as having an ordering relation anterior,

simultaneous, or posterior to some axis within the general reference plane specified by RT. Thus for complete temporal specification, a sentence should specify whether an event happened (EI) before, simultaneous, or after (order) some point or axis of orientation in a specified reference plane (PI), which in turn should be "anchored" by specifying whether that RT is before, simultaneous with, or after (order) the universal public axis of orientation, the moment of utterance(ST).

For full temporal specification, then, all three times (EI, RT, and ST) should be specified as well as the ordering relations between them, specifically the order of the time of the event with respect to the axis in reference time (EI/RT), and the order of (at least the general reference plane of) the Reference Time specified, with respect to the moment of utterance (RT/ST). Given that we know the relation EI/RT and the relation RT/ST, we can deduce the relation EI/ST. In the past, the relation RT/ST, has been identified with the notion of (absolute) "tense", while the relation EI/RT has been identified with the notions "aspect" or "relative tense". (Cf. Binnick (1976:44))

As is well known, the surface syntax of English requires that all "independent" surface sentences contain overt specification of the ordering relation RT/ST, usually marked by (absolute) tense markers. Marking the ordering relation (EI/RT) of the time of the event (EI) with respect to (some axis in) the general reference plane specified by the sentence (RT) is, however, not obligatory. (This is the relation called "relative tense".) As Smith (1976b) shows, however, when this latter type of ordering relation (EI/RT) is specified, it is specified through the use of such operators as (the predicates underlying) surface prepositions such as English before, after, on, in, at, as well as by the surface auxiliary have in the Perfect construction, which specifically marks relative anteriority. (Cf. Smith (1976a; 1976b))

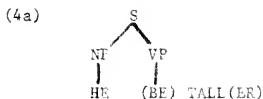
Thus in English, specification of the "absolute tense" relation (RT/ST) is obligatory, while specification of the "relative tense" relation (EI/RT) is optional. As Bull (1960:27) has noted, 'in contrast to English, which "almost always defines the ordering relation of the axis [RT with regard to ST], ... Mandarin is extremely parsimonious. It defines the axis [RT with respect to ST] only to avoid confusion.' It is the thesis of the present work that it is not necessary in Mandarin to specify the ordering relation (RT/ST) of Reference Time to Speech Time and, conversely, that one function of the so-called optional aspect suffix le is to define the ordering relation (EI/RT) of the time of the event with respect to (some axis in) a reference time (which may or may not be explicitly given). Furthermore, it is here advanced that this aspect suffix le characterizes the ordering relation EI/RT ('relative tense') to be one of relative anteriority, as well as additionally expressing perfective aspect. In this respect, le may be characterized as a marker of the Perfect as this term is defined in Reichenow (1978).³

2. We will now examine how the suffix le predicated of the various classes of verbs in Mandarin operates to express relative anteriority and perfective aspect.

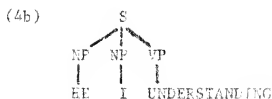
The tripartate classification of Mandarin verbs in Rohsenow (1976a; 1978) into state, action, and change-of-state (CS) verbs derives from Teng (1973; 1975). Examples are given in (1-2) below:

- | | |
|--|---|
| (1) State verbs: | (2) Action verbs: |
| (a) Ta (hen) gao.
he (quite) tall(er)
"He is (quite) tall(er)." | (a) Ta yao lai.
he will come
"He will come." |
| (b) Ta liaojie wo.
he understand me
"He understands me." | (b) Ta bu he cha.
he not drink tea
"He does not drink tea." |
| (c) Ta bu xing Li.
he not surnamed Lee
"He is not surnamed Lee." | |
| (3) CS verbs: | |
| (a) Ta hui si.
he possible die
"He would die." | (b) Ta yao faxian Meizhou.
he will discover America
"He will discover America." |

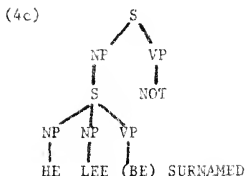
In Rohsenow (1976a; 1978), sentences containing verbs of the above types are analyzed in model-theoretic terms as follows: Stative verbs, mental state verbs, and classificatory verbs have basic underlying one- or two-place predicate states as in (4), as they are intransitive or transitive. (The semantic content of these underlying states is suggested in capital letters in English.)



Ta gao. (= 1a)
"He's tall(er)."

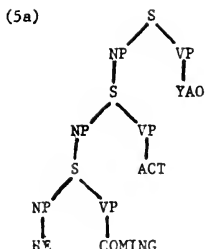


Ta liaojie wo. (= 1b)
"He understands me."

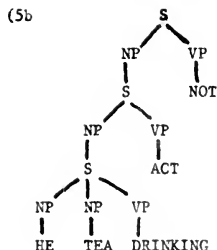


Ta bu xing Li. (= 1c)
"He is not surnamed Li."

Following Ross (1972), action verbs are analyzed as in (5). Note that after predicate raising, the underlying state plus the higher atomic predicate ACT together correspond to the surface action verb.

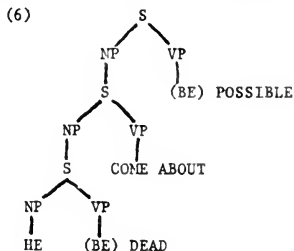


Ta yao lai. (= 2a)
 "He's going to come."



Ta bu he cha. (= 2b)
 "He does not drink tea/
 is not drinking tea."

Change-of-state (CS) verbs consist of an underlying state (which may or may not have a corresponding surface form) embedded under a higher atomic predicate COME ABOUT,⁴ as in (6) (underlies (3a)):



Ta hui si. (=3a)
 "He would die."

Note that the underlying state rendered in (6) as (BE) DEAD has no corresponding surface reflex in Chinese. In combination with the higher atomic predicate COME ABOUT, also sometimes rendered as COME TO PASS, or BECOME (cf. Dowty (1977)); however, this underlying state (BE) DEAD, plus COME ABOUT together lexicalize as the CS verb si "to become dead, to die", and may occur in sentences such as (6) Ta hui si, "He would die."⁵

Note that there are also many underlying states such as (BE) TALL(ER), (BE) FAT(TER), (BE) GOOD (BETTER), (BE) SMALL(ER), etc., which by them-selves have corresponding surface reflexes such as gao "to be tall(er)", pang "to be fat(ter)", hao "to be good (better)", xiao "to be small(er)", etc. These abstract underlying state verbs may, however, also combine with the atomic predicate COME ABOUT to form "derived" change-of-state

verbs whose surface forms happen to be homophonous with the surface forms of the underlying states, but which belong to the different grammatical category (CS verbs). Examples of such "derived" CS verbs are given in (7).⁶

- | | |
|--|---|
| (7a) Ta neng (zhang) gao.
he able (grow) tall(er)
"He can become (grow) tall(er)." | (c) Ta yao hao
he will better
"He is going to improve." |
| (b) Ta hui pang.
he possible fatten
"He would/may get fat(ter)." | (d) Chenshan yao xiao.
shirt will small(er)
"The shirt(s) will be(come) small(er)." |

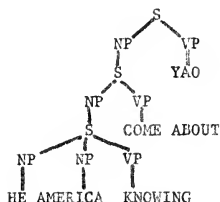
There are, however, some underlying state verbs which may not combine with COME ABOUT in this fashion to produce "derived" CS verbs. An example of such a "pure state" verb is congming, "to be intelligent", which has no corresponding CS verb meaning "to become intelligent". Thus there can be no sentence such as (8):

- (8) *Ta neng congming.
he able intelligent
*"He can become intelligent."

Other examples of such "pure state" verbs are yonggan "to be brave", keqi "to be polite", anjing "to be quiet", liaojie "to understand".

Transitive CS verbs, also known as "achievement verbs", are two-place predicates also consisting of an underlying state (which again may or may not have a corresponding surface form) similarly embedded below the atomic predicate COME ABOUT, as in (9) (underlies (3b)):

(9)

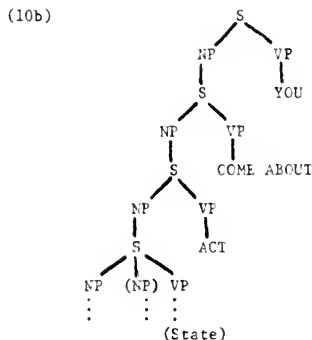
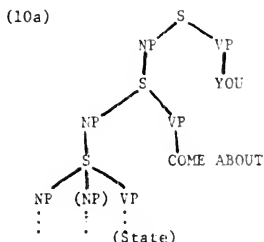


Ta yao faxian Meizhou (= 3b)
"He will discover America."

3. COME ABOUT and the Existential Verb YOU: The above mentioned constructions -- that is, either an underlying state alone or an underlying state commanded by the higher predicate ACT (i.e., an action verb) plus an instance of the higher predicate COME ABOUT -- may further be commanded by the existential operator YOU, sometimes translatable (i.e., sometimes also having as a surface reflex a form translatable) as "to have, there is/there are", etc. As in a number of languages, (French avoir, il y a; Spanish haber, hay; Japanese arimasu, aru; etc.) this existential verb

(which we shall render here as YOU) "asserts the existence of an event or state" (Teng 1973:24). Note specifically here, however, that it is advanced by the present analysis that the "event or state" asserted by the construction under discussion -- a state or action verb plus COME ABOUT further commanded by the existential predicate YOU -- is the coming about of the underlying state or action predicated. The effect of predicating the existential verb YOU over the atomic predicate COME ABOUT (which itself commands an action or state) is to describe that state or action as "having come about". Thus, similar to the case in English (and those other languages where some form of the existential or 'have' is associated with the perfect; cf. above), the existential verb here expresses the ordering relation of anteriority, as suggested, for example, in the analysis of English "perfect have" given by C. Smith (1976a) referred to above.

Specifically, states and actions embedded under COME ABOUT in turn commanded by existential YOU have underlying structures as in (10a) and (10b) respectively:



Structures such as (10a) and (10b) underlie sentences as in (11) and (12) respectively:

- (11a) Ta si le.
he die le
"He had died."

- (b) Ta gao le.
he tall le
"He became/had become tall(er)/
he is tall(er) now."

- (12a) Ta lai le.
he come le
"He came/had come/
comes/is coming (now)."

- (b) Ta he le cha.
he drink le tea
"He drank/had drunk tea."

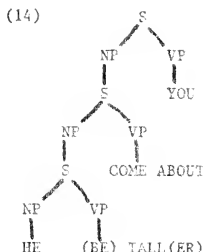
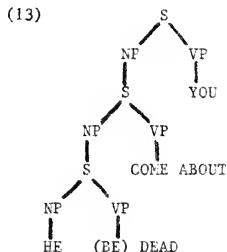
Note that is is the underlying syntactic combination of COME ABOUT commanded by the higher existential verb which in combination underlie the surface marker *le*, and that semantically this combination expresses the existence (YOU="being") of the "coming about" of the underlying state or

action. This analysis thus differs from earlier analyses of surface le (Wang 1965; Teng 1973; Su 1973; Rohsenow 1976a) in not identifying instance of le in surface structure with any one operator in underlying structure, but rather analyzing such instances of surface le (as well as instances of surface meiyou--to be discussed shortly) as markers of the interaction of the two logical predicates in underlying structures under different syntactic conditions.

As to the question of whether what is being asserted is an "event or state" (cf. quote from Teng 1973:24 above), note that the "coming about" of a state or action while itself an event, serves to create a new state of that state or action's having (at some time) come about. Thus sentences such as those in (11-12) above describe a change from (a state of) non-existence of a state or action to (a state of) the existence of the state or action as having taken place (at some unspecified time).

The interaction of action verbs commanded by COME ABOUT in turn commanded by the existential YOU is thus relatively straightforward, signifying in (12a), for example, a change of state from "not coming" to "coming" as "having come about". (The placement of surface le in transitive actions predicates such as (12b) is discussed in section 5 below and in Rohsenow (1978)).

Note that the verbs in (11) are change-of-state verbs, either "inherent", as si "to become dead, to die" in (11a), or "derived", as gao, "to become tall(er), to grow" in (11b). Thus the structure underlying a sentence such as (11a) containing the "inherent" CS verb si (which consists of the underlying state (BE) DEAD plus the higher predicate COME ABOUT) is in (13) below:

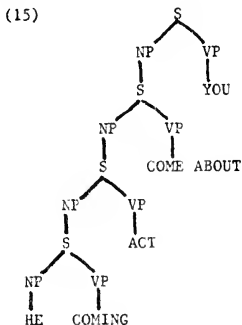


That is, (11a) asserts of "his coming to be dead" that it exists, or describes (the state of) "his being dead" as "having come about" (as of some unspecified time).

Similarly, we analyze the structure underlying a sentence such as (11b) which contains the "derived" CS verb gao "to become tall" (which consists of the underlying state verb (BE) TALL(ER) commanded by COME

ABOUT) as in (14). (See above.) That is, (11b) asserts of "his coming to be tall(er)" that it exists, or that (the state of) "his being tall(er)" has (had/will have) come about (prior to some unspecified time).

Note further that it is also possible to view the structure just given in (14) as similar to that underlying sentences such as (12a) above which contain an action verb plus le in their surface structure. The underlying structure of (12a) is given in (15):



As noted above, (12a) Ta lai le describes (the act of) "his coming" as "having come about" (as of some unspecified time). Note that in (15) the combination of COME ABOUT plus YOU appears to correspond directly with the presence of the surface marker le. One may similarly view the structure in (14) which underlies (11b) Ta gao le as a combination of COME ABOUT plus higher YOU (corresponding to surface le) predicated of the state verb (whose surface reflex is) gao. This interpretation is perfectly acceptable and accounts for the ambiguity of such sentences as reflected in the two readings "He became tall(er)/He is tall(er) (now)".

Recall, however, that some state verbs such as congming cannot combine with COME ABOUT to form "derived" CS verbs. For such "pure state" verbs there can be no sentences such as (16):

- | | | | |
|------|---------------------------------|------|-------------------------|
| (16) | *Ta yao congming. | (17) | *Ta congming le. |
| | he will intelligent | | he intelligent |
| | *Ee will be/become intelligent. | | *He became intelligent. |

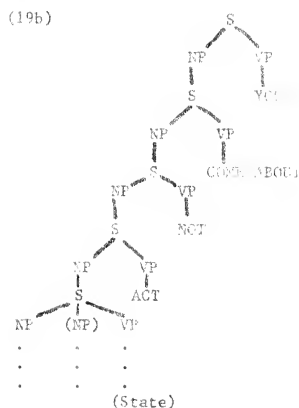
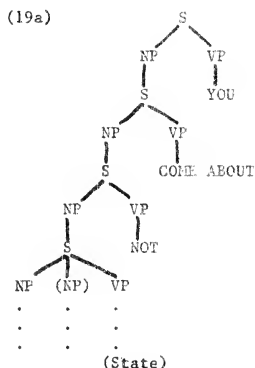
In addition to the fact that such state verbs may not be commanded by a higher instance of COME ABOUT to form such "derived" CS verbs is the fact that such state verbs also may not occur in sentences such as (17) (above). (Cf. R. Cheng 1977:18). That is, this type of state verb, which may not be commanded by COME ABOUT alone, also may not be commanded by the combination of COME ABOUT plus higher YOU (which correlates with the presence of surface le). Thus collocability with the higher predicate COME ABOUT

is in a sense prerequisite for eligibility to further combine with a higher existential YOU to form sentences such as (11b) *Ta gao le*. Thus while a sentence such as (11b) with an underlying structure as given in (14) may be viewed on the surface as an underlying state verb plus *le*, it is perhaps better viewed as a combination of a "derived" state verb plus a higher predicate YOU, parallel to sentences such as (11a) *Ta si le* containing "inherent" CS verbs. This asymmetry may be summed up in a chart, as in (18):

(18)	Pure State:	State:	Derived CS:	Inherent CS:
Underlying	Ta (hen)	Ta (hen)	----	----
State:	congming	gao.		
Plus COME		----	Ta yao gao.	Ta yao si.
ABOUT:	----			
Plus YOU:	----	Ta gao le=Ta gao le.		Ta si ie.

As noted in Rohsenow (1978) failure to distinguish correctly between state verbs and their "derived" change-of-state counterparts (as, e.g., in Comrie 1976:19-23) has given rise to serious confusion in the study of the interaction of "state verbs" with the "perfective".

It follows that if the underlying state or action is itself negated (as in (19a/b)), then a reverse shift from existence of state or action to non-existence of state or action is described, as in (20-21):



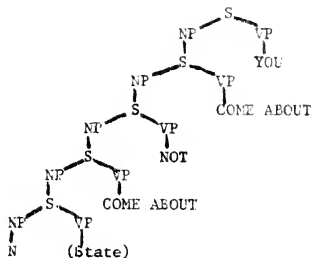
- (20a) Ta bu yonggan le.
 he not brave le
 "He is no longer brave/
 (Contrary to what was expected,) he is not brave."
- (b) Ta bu gao le.
 he not tall le
 "He is no longer tall(er)/
 (Contrary to what was expected,) he is not tall(er)."
- (21a) Ta bu he cha le.
 he not drink tea le
 "He not longer drinks/is drinking tea/(Contrary to what was expected,) he does not drink/is not drinking tea."
- (b) Ta bu lai le.
 he not come le
 "He no longer comes/is no longer coming/(Contrary to what was expected,) he does not come/is not coming."

The acceptable sentences in (20-21) may be used to describe either the actual termination of some state or action (the "no longer" readings) or the coming about of a reversal of a conception previously held by the speaker or hearer to be true (i.e., contradiction).

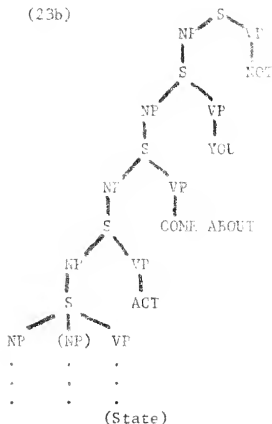
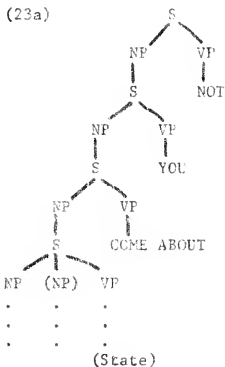
Because "inherent" change-of-state verbs such as si "to become dead/to die" incorporate COME ABOUT within themselves, a sentence such as (22a) must be analyzed as in (22b). Note, however, that a sentence containing a "derived" change-of-state verb such as gao in (20b) could not have the underlying structure given in (22b), as there would be no way to differentiate between its surface realization and that of (19a) (underlies (20b)).

- (22a) Guofu sixiang bu si le.
 National father thought not die le
 "The National Father's thought never dies/will never die (now)/
 (Contrary to what is believed,) the National Father's thought.
 will never die."

(22b)



If it is the combination of COME ABOUT commanded by the existential verb YOU which is negated, then the semantics of the predication describe the coming about of the state or action as not existing, or not having come about, and the resultant state not existing. Thus the negative forms of the structures in (10a) and (10b) above are given in (23a) and (23b), and the corresponding negatives of the sentences in (11) and (12) are given in (24) and (25). (Note that mei is the surface form of the negative which occurs only before the surface existential verb you "to have". (Cf. Chao (1968:666))



(24a) Ta mei (you) si.
 he not (have) die
 "He did not die/had
 not died."

(b) Ta mei (you) gao.
 he not (have) tall
 "He did/had not become
 tall(er)."

(25a) Ta mai (you) lai.
 he not (have) come
 "He did/had not come."

(b) Ta mei (you) he chai.
 he not (have) drink tea
 "He did not drink/had not
 drunk tea."

Note that the surface marker you (after the negative mei-) in these sentences indicates the presence in underlying structure of both COME ABOUT plus the higher existential predicate YOU in turn commanded by the negative (which accounts for surface mei-). Thus gao in (24b) can only be identified as a ("derived") CS verb, parallel to the ("inherent") CS verb si in (23a). It was also noted previously that a "pure state" such as (BE) INTELLIGENT, corresponding to the surface state coming "intelligent" could not be commanded by either COME ABOUT alone or COME ABOUT plus YOU. Therefore there is no possible negative structure corresponding to (23a)

with (BE) INTELLIGENT as its underlying state, which accounts for the non-occurrence of mei(you) with such "pure state" verbs as in the unacceptable (26)(cf. RCheng 1977:18):

- (26) *Ta mei(you) congming.
 he not (have) intelligent
 *He did not become intelligent.

Note again that the present analysis differs from that of Wang (1965) and Su (1973) in rejecting the notion of a le~you alternation in the sense that both are taken to be variant surface manifestations in complementary distribution of one underlying form (usually identified with either you or le). This analysis also differs from that of Leng (1973) and Rohsenow (1976a) in not identifying the underlying atomic predicate COME ABOUT directly with the surface form le (either Teng's "Lp" or "Li"), but rather in correlating the presence of such surface forms as le and (mei)you in surface structure with the presence of both COME ABOUT and the existential verb YOU in the underlying structure of both affirmative and negative sentences. More importantly, the present analysis also differs in relating the meaning of sentences containing le and meiyou in a systematic fashion to well-defined logical operators in their underlying syntactic-semantic structures.

4. I would like to suggest that underlying surface sentences with le and meiyou, the existential predicate YOU operates as a marker of relative anteriority similar to "have" in the English Perfect, while it is also possible to identify the function of the atomic predicate COME ABOUT underlying such sentences with the notion of "perfectivity" when this notion is properly defined. Note again that under this analysis neither surface le nor surface (mei)you is a direct surface reflex of either one of these underlying predicates, but rather that both are surface reflexes of the presence of both underlying predicates operating in combination, under different syntactic conditions (i.e., presence or absence of a higher negative).

It is of course not uncommon to find surface realizations of the universal existential predicate (e.g., Chinese surface you, French il y a, Spanish hay, Japanese arimasu, etc.) used to assert that a state exists. In command of a subordinate instance of COME ABOUT (which in turn commands an embedded S), the existential expresses the existence of a (new, state of being ('s having come about) for the state or action commanded by COME ABOUT, thus expressing relative anteriority. An analysis of English Perfect "have" as a marker of relative anteriority has been given by C. Smith (1976b). The present analysis derives from that of Bull (1960:26-27) in asserting that the underlying existential predicate operates as a marker of anteriority only in conjunction with an underlying operator such as COME ABOUT (cf. English Perfect, as well as the languages cited above in which some form of the surface existential is also used in the Perfect: English He has seen it; French il l'a vu; Spanish el lo ha visto; Japanese mito aru, etc.)

The verbal suffix le in Mandarin has also been characterized as a marker of "perfective aspect" (Chao 1968:246; Comrie 1976:58;81-82). In his recent book on aspect, Comrie (1976:16) characterizes perfectivity as "the view of the situation as a single whole, without distinction of the various phases which make up that situation, while the imperfective pays essential attention to the internal structure of the situation." Examples of verbs with imperfective and perfective meanings are given by Comrie (1976:3) as in (27).

- (27) John was reading when I entered.

Of this sentence, Comrie notes:

The second verb presents the totality of the situation referred to (here "my entry") without reference to its internal constituency [cf. his definition of perfectivity just above - J.R.]: the whole of the situation is presented as a single unanalyzable whole, with beginning, middle, and end rolled into one; no attempt is made to divide the situation up into the various phases that make up the action of entry. Verbal forms with this meaning will be said to have perfective meaning, and where the language in question has special verbal forms to indicate this, we shall say that it has perfective aspect. (1976:3. My italics - J.R. See also 1976:40)

This characterization of perfectivity is similar to that described by Kirsner and Thompson (1976:216-217) as "bounded in time", as of the verb drown in (28a) (1976:215):

- (28a) *I saw her drown, but I rescued her. [Perfective]
(b) I saw her drowning, but I rescued her. [Imperfective]

It is "perfectivity" in this sense of a "bounded" amount of a state or event which I should like to identify with the atomic predicate COMPLET. This atomic predicate predicated of a state or activity expresses the action of a certain delimited ("bounded") amount of the state or activity taking place. When not in conjunction with a higher logical operator such as the existential predicate or tense, this delimitation of the state or activity is an (as yet) unrealized conception, as may be seen in English sentences referring to future or subjective situations:

- (29a) Would you like to see him drown?
(b) Would you like to see him drink a cup of tea?
(c) Would you like to see him drink?

The complement predicates in these sentences are understood to refer to a certain delimited amount of state or activity as taking place (coming about), although nothing has actually happened or may ever happen. Further, unless the activity is inherently resultative (as in 29a) or has a quantifier specifying a certain amount of activity (as in 29b), the amount

activity is understood to be delimited ("bounded") but unspecified as to amount. Higher predication by the existential predicate (and/or tense) will of course further specify that such an (otherwise abstract) amount of activity actually 'has' (or 'did') take place.

Note also that Comrie states that his notion of perfectivity denotes "a complete situation, with beginning, middle, and end", and stresses that he prefers the term 'complete' to 'completed', because "the use of 'completed' ... puts too much emphasis on the termination of the situation" (1976:18). Under the present analysis, the presence of the verb suffix le represents an instance of the atomic predicate COME ABOUT embedded under the existential predicate YOU, and conveys that (some amount of) the state or activity embedded under COME ABOUT has (had/will have) come about (as of some unspecified time).

If the state or activity in question is quantified, predication with le indicates the coming about of a specific (quantified) amount of the state or activity, and thus implies completion of that amount of state or activity, as in (30). (Cf. Comrie 1976:82)

- (30) Ta xie le yi feng xin.
he write le one classifier letter
"He wrote a letter."

(The syntax of such quantification is analyzed in section 5 below.) Completion is only inferable, however, if the amount of action is not actually specified, as in (31):

- (31) Ta xie le xin.
he write le letter
"He wrote a letter (some letters)/he engaged
in some letter-writing activity."

All that (31) says is that some amount of letter-writing has (had/will have) taken place, or that a shift from non (existence of) letter-writing to (existence of) letter-writing has (had/will have) come about. Thus a sentence such as (31) is ambiguous, and may be taken only in an inchoative sense, as may be seen from (32):

- (32a) Ta xie le xin, keshi mei(you) xie wan.
he write le letter, but not(have) write finish
"He did some letter-writing (i.e., started to write letters) but didn't finish."

(b) Ta xie le xin, keshi xie bu wan.
he write le letter, but write not finish
"He did some letter-writing (i.e., started to write letters) but couldn't finish."

Further, for some native speakers, even overt quantification does not prevent an inchoative reading, as in (33). (Cf. Chu 1976:48):

- (33) Wo xie le yi feng xin, keshi mei(you) xie wan.
I write le one clfr. letter, but not(have) write finish
"I worked on a letter, but didn't finish it."

Thus, contrary to Comrie, it seems that even when commanded by the existential YOU, the 'perfective' (COME ABOUT) does not specifically assert (even) a complete action (as well as not asserting a completed one) unless a certain amount of action is specified, as by a quantifier, as in (30). (The lack of specificity as to completion even in sentences with quantifiers --compare (30) with (33)--for some native speakers, suggests that the perfective component of le (i.e., COME ABOUT) may give only an implicature of completion. (Cf. Comrie 1976:29; Grice 1975))

The perfectivity of meaning in (30) implies completeness or completion only because a certain amount of action is specified by the quantifier. In sentences such as (31), however, we know only of the existence of some letter-writing as having come about; there is no quantifier to suggest completion. A similar situation in English may be found by examining perfective sentences with and without quantifiers. Kirsner and Thompson (1976) note that verbs of perception force a perfective reading of their complement predicates. (See (28) above).

- (34a) You will see him drink a cup of tea.
(b) You will see him drink tea.
(c) You will see him drink.

The perfectivity of the quantified action in (34a) describes the (complete) drinking of one cup of tea as coming about. The notion of completeness clearly stems from the presence of the quantifier, and a complete act, which -- as noted by Comrie -- includes inception, middle, and termination, may be viewed as a completed one. In (34b and c), however, we know only of some unspecified amount of tea-drinking's coming about. This is equally a complete act, but with no quantifier expressed or even implied, there is no specifically delimited amount of activity which one may view as complete(d). This is the effect of "perfective le" on Chinese action predicates, as in (31) above.

I suggest then that Comrie's characterization of "perfective aspect" as "viewing the situation as a complete whole" (1976:18) is better understood in terms of the present analysis of being subordinate to the proposed universal atomic predicate COME ABOUT. Comrie's notion of the perfective as "denoting a complete situation with beginning, middle, and end" (1976:18) has been seen to be accurate in that COME ABOUT predicates that some amount of activity is described as coming about, but the terms "complete" and "beginning, middle, and end" place too much stress on quantified actions. Any notions of completion derive from notions of quantification either explicit in the predication itself, or else inferred from context. As noted below in section 5, the interaction of the aspect markers le with quantification and context leads us into the related realms of discourse analysis and pragmatics.

5. Understanding the true nature of the perfect and its function in the time deixis marking system of Mandarin clarifies the interaction of Mandarin verbs with the verbal and sentential markers le. A sentence such as (35):

- (35) Ta lai le.
he come le

is ambiguous among readings translated as "he came", "he has come", or "he had come". Because le indicates only that a change of state from (a state of) not coming to (a state of) coming has (had/will have) taken place, the predicated of lai "to come" only describes some event of coming as "having come about". But if no specific RT is given (which might orient us towards ST), then we have no way of knowing where to place such an isolated utterance in the time universe. Of course, in real life discourse, such reference time axes are obvious from context, either elsewhere in the discourse, or at least from the extralinguistic "context of situation" (cf. Malinowski, 1923; J.R.Firth, 1957).

As is common in human languages, in the absence of any specification to the contrary, RT will be taken ("by default", as it were) to be the moment of utterance, "now": "the present". Thus (35) ta lai le would ordinarily translate as "he came" or "he has come (as of now)". In a certain context, however, it might be clear that le indicated anteriority to an earlier RT, as in (36):

- (36) (Wo chi lai de shihou) ta (yijing) lai le.
I get up of time he already come le
"(When I got up) he had (already) come."

Note that this analysis eliminates the need for the "haploegia" or "reduced double le" analysis advanced by Chao (1968:246) for such sentences.

A similar analysis may be advanced for transitive sentences containing a "sentence final particle" le, as in (37):

- (37a) Ta he cha le. (b) Ta he san bei cha le.
he drink tea le he drink 3 glass tea le
"He has drunk (some) tea." "He has/had drunk three glasses of tea (so far)."

In the absence of any explicit or contextual specification to the contrary, such a "sentence final" le is taken to mean that the state or action in the sentence commanded by the (operators underlying) "sentence final" le "has" come about as of the time of utterance. However, if context, either explicit or implicit, indicates the contrary, a different reading is possible, as in (38):

- (38a) (Wo chi lai de shihou), ta (yijing) he cha le.
"(When I got up), he had (already) drunk some tea."

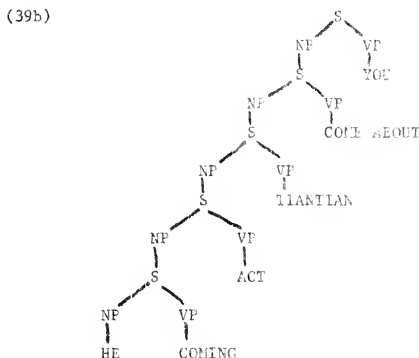
- (38b) (Wo chilai de shihou), ta (yijing) he san bei cha le.
 "(When I got up), he had (already) drunk three glasses of tea
 (so far)."

(Sentences such as those in (37) with "sentence final" le only of course also have a simple change-of-state reading in which a general change of habit or action is predicated, i.e., (37a) "He drinks teas now"; (37b) "Now he drinks three glasses of tea (e.g., as opposed to some other number).")

The so-called "sentence final" le represents a combination of the operators COME ABOUT plus the existential YOU which together have the remainder of the predicate in their domain. Thus in a sentence such as (39a)

- (39a) Ta tiantian lai le.
 he everyday come le
 "He comes everyday (now)."

the "sentence final" le (i.e., COME ABOUT plus YOU) must command the adverbial tiantian "everyday" as in (39b):



giving the readings, "He comes everyday (now)" or "He('s) started coming everyday (now/then)". If "sentence final" le were commanded by tiantian, the proposition would assert that the one time change of state from "not coming" to "coming" came about not once, but repeatedly everyday, a logical contradiction.

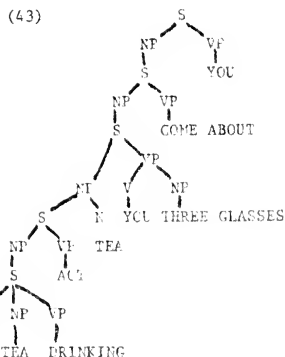
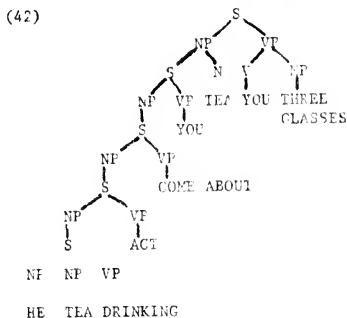
With some transitive predicates, however, it is possible to distinguish between the so-called "verb suffix" le and "sentence final" le depending on the relative height of the operators which underlie these two le's in underlying structure. Thus while (37b) with "sentence final" le alone may mean "He has (had) drunk three glasses of tea (so far).", (40) means only "He drank three glasses of tea.":

- (40) Ta he le san bei cha.
he drink le three glasses tea
"He drank three glasses of tea."

while a sentence such as (41), in an acceptable context, means "He drank (some) tea":

- (41) Ta he le cha.
he drink le tea
"He drank (some) tea."

Dealing first with the quantified predicates, we may analyze sentences such as (40) as in (42) (cf. K. Mei, 1972:251):



The underlying structure of (37b) ta he sar bei cha le, on the other hand, is as in (43) above. The difference in the surface positioning of le in the two sentences is thus a function of their relative height in underlying structure.

As noted above, in the absence of any specification (explicit or contextual) to the contrary, sentences such as those in (37) will be taken to "have come about" as of the moment of speaking (RT = S1). This is equally true even when two instances of the combination of COME ABOUT plus YOU occur in underlying structure as in (44):

- (44a) Ta he le san bei cha le.
 he drink le three glass tea le
 "He has/had drunk three glasses of tea (so far)."

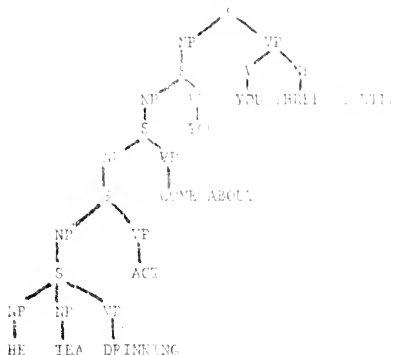
(Note that the addition of the "verbal suffix" le to a sentence such as (37b) above removes the ambiguity between the "so far" reading and the "change of state" reading noted above.) The underlying structure of (44a)

(Cf. parallel restriction on the use of English "present perfect" in the afternoon: "I have drunk three glasses of tea (so far) this afternoon/ *this morning.")

It appears that a so-called "verbal suffix" le placed within the surface verb phrase is acceptable only when embedded in a clause which is itself commanded by a higher predicate. In sentences with quantified objects such as (40) above, the higher quantifying predicate (containing the existential verb YOU) serves as the higher predicate. Such quantification may be of the object, as in (40), or of the entire action, as in the so-called "time as a measure of action" durationals, as in (46):

- (46a) Ta he le san fen zhong de cha
he drink le three minutes of tea
"He drank tea for three minutes."

(b)



An interesting problem arises, however, with unquantified transitive predicates when no such higher predicate is present to account for the surface positioning of the "verbal suffix" le. Here, while all speakers of Mandarin accept sentences such as (47a) (= 47b), many "older" speakers of "Peking" Mandarin are said to object to sentences such as (47b) in isolation, feeling that they are "incomplete", or synonymous with the dependent clause in (47c) and preferring a sentence as in (47a) or (47d):

- (47a) Ta he cha le.
"He drank/ has (had) drunk (some) tea."
(b) (?) Ta he le cha (.)
"He drank (some) tea/ Having drunk some tea, he ..."
(c) Ta he le cha (yihou), jiu zou le.
he drink le tea (after) then leave le
"(After) having drunk some tea, he left."

- (47d) Ta he le cha le.
 "He has (had) drunk (some) tea."

A "sentence final" le provides the listener with the RT "moment of utterance" (=ST). When the surface le is positioned "within" the surface verb phrase, however, many speakers feel at a loss for some higher predicate which would orient them. (Note that the higher predicate in sentences with quantifiers such as (40) or (46) is simply the statement of existence conveyed by the YOU in the higher predicate.) In isolation, out of context, such sentences feel "incomplete".

It is interesting to note, however, that not only are sentences such as (47a) cited in isolation by Chinese linguists, e.g., L. Wang 1946:114), but also that M. Spencer found that seventy percent of sentences containing le in the dialogue plays of the modern writer Lao She which she examined contained such V -le O constructions (Spencer 1970:26).

In his recent Harvard Ph.D. thesis, K. Mei (1972:287-8) notes that:

Professor Lian Shang Yang⁷ has told me that the [sentence] final le is required in all cases when there is an indefinite post-verbal phrase, but I think this rule probably reflect[s] the Peking dialect spoken by older generations. To the younger people, I'm quite sure, the following sentences are all well formed:

- [48] a. ta zai Jiazhou fa le cai "he got rich in California"
 b. wo zuotian kan le dianshi "I watched TV last night"
 c. wo [jintian] zaoshang li le fa "I had a haircut this morning."

[sic; but my additions - J.R.]

From the point of view of the present analysis, what is significant about the sentences in (48) is that the adverbials, which may be analyzed as higher predicates, all provide a context. It appears that the precondition for placement of le within the surface verb phrase is the presence of a higher context- providing predicate, either explicitly, as with the higher quantifiers in (40) or (46), a higher matrix sentence, as in (47c), a higher "sentence final" le, as in (47d), or adverbials, as in (48), or implicitly, in terms of explicit or implicit time references in other sentences in the discourse, or in the "context of situation". Such an analysis of the conditions for the placement of the "verb suffix" le within the transitive verb phrase takes us beyond the limits of "(one) sentence grammar" and even beyond "transderivational constraints" (G. Lakoff, 1971), and into the realms of discourse analysis and pragmatics.

NOTES

1. Portions of the present paper were presented to the Symposium on Chinese Linguistics, Honolulu, Hawaii, July, 1977, and to the Tenth International Conference on Sino-Tibetan Languages and Linguistics, Washington,

L.C., October, 1977.

2. Cf. Chomsky (1965:107): "Aux \rightarrow Tense (Modal) (Aspect)".

3. This Reichenbachian analysis of the "Perfect" in English and Mandarin marking relative anteriority (as well as perfective aspect, cf. below) clarifies Comrie's notions of "relative" vs. "absolute" tense (1976:1-2), as well as resolving his equivocation as to whether the Perfect is an "aspect" or not (1976: 52-55).

4. COME ABOUT is defined in terms of George von Wright's (1968) logic of change as by Dowty (1972:43): "COME ABOUT =_{def} $\sim p \wedge N p$ ". (Cf. Reichenow 1976a). In Dowty 1977:55, this predicate is called BECOME.

5. Examples of similar CS verbs whose underlying states have no surface reflexes are chen 'to sink', po 'to become broken', wan 'to finish', cheng-gong 'to become successful'. A list of such verbs is given in Teng (1975: 165 (10)).

6. Note that not all state verbs have homophonous CS forms. A test for distinguishing states which do from states which do not is given by Teng (1973:35 fn. 16).

7. L.S. Yang also criticized the Chinese linguist L. Wang cited above for giving sentences with 'verbal suffix' le but no additional "sentence final" le. See L.S. Yang's (1964) review of L. Wang (1964).

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TEACHING CHINESE NUMERATION ON COMPUTER

Chin-Chuan Cheng

In numeration, only a few linguistic rules and a limited number of lexical items are involved. Yet, bilingual speakers often fall back to their native languages when counting is required. A computer lesson on Chinese numeration has been implemented on PLATO at the University of Illinois to help the student attain fluency. This paper deals with the following aspects of the interactive lesson: (a) the structure of the lesson, (b) rules of numeration in Chinese, (c) algorithms for computer translation of numbers from concepts to words, and (d) the use of computer-generated random numbers for selecting alternative ways of expression. Since the lesson writes Chinese in both Pinyin and characters, the display of Chinese characters on the computer is also discussed.

Generally speaking, numeration is fairly simple as compared to other linguistic expressions. There are only a few rules, and the number of lexical items involved is small. Yet, we all know that when one speaks a second language, the numerals, especially larger ones, are often the slowest to produce and the hardest to understand. For example, people usually fall back to their native languages in order to be able to count quickly or to repeat the number for understanding.

It is perhaps because of the surface simplicity of the numeration system that counting is often overlooked or slighted in foreign language teaching. On the other hand, extensive drills on numbers in a classroom setting are not very enlightening. Moreover, numeration generally does not require the understanding of intonation and the intricate social interactions of the speakers. Furthermore, the linguistic rules can be made explicit for a computer to generate and understand the system. It is therefore feasible and desirable to teach numeration on computer. Such a computer-assisted instruction can relieve the classroom teacher from the extensive drills. As we all have an urge to "out-wit the computer", it can also provide an incentive for the student to study.

On the basis of the above considerations, I have implemented the teaching of Chinese numeration of positive integers on the interactive PLATO system at the University of Illinois. The lesson is part of the series of the Chinese teaching materials on PLATO (see Chen and Cheng (1976) for an interim report). However, since the vocabulary is small in number, it can be considered self-sufficient and hence can be used independently. The only prerequisite is that the student needs to know the pronunciation of Chinese words as given in the Pinyin system. On the computer, the Pinyin romanization

is slightly modified, with 1, 2, 3, and 4 attached to the end of each syllable instead of the conventional diacritic marks to designate the high level, high rising, low level, and high falling tones.

1. LESSON STRUCTURE. The lesson is designed to be used as much as possible to attain fluency and as long as the student wishes to stay on the computer. In order to accomplish such a function, after learning the general rules the student is allowed to do various tests. It, therefore, consists of the following sections:

- (1) (a) Explanation of numeration concepts, showing the contrasts between the Chinese and English systems.
- (b) Vocabulary and the writing of the Chinese numerical characters.
- (c) Exercises to allow the student to type in any numbers in Arabic numerals or in English words for the computer to translate into Chinese words.
- (d) Exercises to allow the student to type in numbers and the corresponding Chinese phrases for the computer to judge the grammaticality of the Chinese wording.
- (e) Exercises to allow the student to translate numbers randomly generated by the computer into Chinese word. The computer immediately judges the response.
- (f) Evaluation of the student's performance at the end of a session, showing the number of mistakes he has made.

Since numbers are infinite, the student doing the exercises will rarely encounter the same number, unless he deliberately chooses to do so to see alternative ways of expression. The lesson, therefore, can be considered open-ended. Naturally, there is the limitation of human memory and computer storage. For practical purposes, numbers greater than or equal to a trillion (1x10¹²) are not accounted for in exercises.

The linguistic rules and computer algorithms for the implementation of the lesson are given in detail in the following sections.

2. CONCEPTS AND WORDS. As the lesson is intended for English speakers, comparisons of the numeration systems of the two languages can help place emphasis on the right points for learning. The explanations of the concepts is hence done in a contrastive fashion.

The learning of the numbers 0 through 10 is treated as a matter of acquiring the lexical items:

- (2) zero--ling², one--yī¹, two--èr⁴, three--sān¹, four--sì⁴,
five--wǔ³, six--liù⁴, seven--qī¹, eight--bā¹, nine--jiǔ³,
ten--shí²

The other Chinese words used in the lesson are the following:

- (3) two--liǎng³, hundred--bǎi³, thousand--qiān¹,
ten thousand--wàn⁴, hundred million--yì⁴,
trillion--zhāo⁴

The vocabulary section give the meanings for all these words. It also shows the Chinese characters. By pressing a designated key, the student can also see the writing of each character stroke by stroke. The design and display of Chinese characters will be discussed later.

Unlike English, the Chinese way to express the concepts between 11 and 99 is simple:

- (4) (a) Say the number of tens, the word shí², and the number of ones if it is not zero.
(b) If the number of tens is 1, yī can be optionally omitted.

For example,

- (5) (a) 32 sān¹ shí² èr⁴
(b) 15 yī¹ shí² wǔ³
(c) 15 shí² wǔ³

The interference of one's native language usually occurs when the number is greater than a thousand. In my view, part of the difficulty can be attributed to the fact that the Chinese and English names change at different amounts. In the lesson the student is explained the following difference in naming the units of the power of 10:

- | | | | |
|---------------------|-------------------|------------------------------------|------------------|
| (6) 10 ¹ | 10 | shí ² | ten |
| 10 ² | 100 | bǎi ³ | hundred |
| 10 ³ | 1,000 | qiān ¹ | thousand |
| 10 ⁴ | 10,000 | wàn ⁴ | ten thousand |
| 10 ⁵ | 100,000 | shí ² wàn ⁴ | hundred thousand |
| 10 ⁶ | 1,000,000 | bǎi ³ wàn ⁴ | million |
| 10 ⁷ | 10,000,000 | qiān ¹ wàn ⁴ | ten million |
| 10 ⁸ | 100,000,000 | yì ⁴ | hundred million |
| 10 ⁹ | 1,000,000,000 | shí ² yì ⁴ | billion |
| 10 ¹⁰ | 10,000,000,000 | bǎi ³ yì ⁴ | ten billion |
| 10 ¹¹ | 100,000,000,000 | qiān ¹ yì ⁴ | hundred billion |
| 10 ¹² | 1,000,000,000,000 | zhāo ⁴ | trillion |

It should be obvious that the English names of the units change at every third power of 10, whereas Chinese names change at every fourth power. The punctuation convention, which groups 3 digits together, reflects precisely this fact of English. The Chinese and Japanese punctuation used to mark off digits in groups of 4, which is sensible to the speakers of these languages, but now has changed to the English system to conform to the Western practice for international communication.

Hsueh (1974) convincingly argues on the basis of both literary and figurative expressions that "thousand" is the "psychological maximum sum" in English; the Chinese "psychological maximum sum", on the other hand, is "ten thousand" (wan⁴). He then concludes that the difficulty in quickly translating one system to another by bilingual speakers is because of such a "psychological" difference. I believe the fact that in English the word hundred can take attributes greater than 9 is another cause of the difficulty. For example, 1100 can be said as eleven hundred or one thousand one hundred in English while in Chinese we must use the word wan⁴ 'thousand'. On the other hand, the Chinese word wan⁴ can be freely "multiplied". The concept "hundred million" can be said as yi² or wan⁴ wan⁴.

The rules of numeration in Chinese are given below:

- (7) (a) starting at the numerically highest unit, say the number of the unit and the name of the unit. Proceed to the lower units in the same way until the end.
- (b) If the number of a unit is zero, then the name of the unit is not said.
- (c) Zeros at the beginning and at the end are not mentioned.
- (d) The word ling² is mentioned for the zero or zeros occurring between two non-zero numbers.
- (e) Before the unit names other than shi² and shi² wan⁴, er² can also be said as ling².
- (f) The unit name of the last non-zero number can be optionally omitted if it is preceded by a non-zero number in the next higher unit.

The following is a set of examples illustrating the numeration rules, including those given earlier for the numbers between 0 and 99:

- (8) (a) 102 yi² bai³ ling² er²
- (b) 120 yi² bai³ er² shi² or yi² bai³ er²

(c) 5346 wu3 qian1 san1 bai3 si4 shi2 liu4

(d) 123456789 yi1 yi4 liang3 qian1 san1 bai3 si4 shi2
wu3 wan4 liu4 qian1 qil bai3 bai shi2
jiu3

In (8d), wan4 wan4 and er4 can replace yi4 and liang3 respectively. Naturally, in the lesson the student is given much more examples to illustrate the use of the rules.

3. EXERCISES. It is not of much use to present only rules and examples for learning. Exercises are important components of the lesson. As mentioned before, there are three sets of exercise. The first set allows the student to type in a number in Arabic numerals or English words. The computer translates the numerals or words into a number concept. From the concept it then generates the Chinese numeration in both Pinyin and Chinese characters. For example, in the following, (9a) is the student's typing; (9b) and (9c) are the Chinese phrase in romanization and characters generated by the computer:

(9) (a) 2003

(b) er4 qian1 ling2 san1

(c) 二千零三

This type of exercise allows the student to find out how a specific number is said in Chinese. By pressing certain designated keys he can repeat the exercise or go to other sections.

The second type of exercise allows the student to check his understanding of the rules. He is asked to type in a number in Arabic numerals or in English words and the corresponding Chinese way of numeration. The computer translates both into numerical concepts. If both match, the computer gives an encouraging response; the student then may repeat the exercise to do a different number. If the concepts do not match, then the computer requests the student to try the Chinese phrase again. If he fails to type in the correct phrase to match the number at the third trial and beyond, the computer then shows the phrase in Pinyin and in Chinese characters.

In the third type of exercise the number is randomly generated by the computer and given in Arabic numerals for the student to translate into Chinese in Pinyin. Judging responses similar to those given above are provided.

As said earlier, these exercises are open-ended; the number can vary from zero to one trillion. The limit is simply a practical one; the computer follows certain algorithms to judge or generate responses.

4. TRANSLATION ALGORITHMS. The translation from Arabic numerals to numerical concepts as bit configurations in the computer is done by the computer system. The translation from English words to numerical concepts is linguistically interesting, but it is not the focus of this paper and will not be discussed here. In the following, I will discuss only the algorithms relevant to Chinese numeration. I will specifically not show alternative ways of saying the same thing can be done by the computer. There is no unique way of translating numbers into words or vice versa. However, the algorithms presented here are intended to reflect the working of the rules that we get used earlier. Due to the nature of the paper, many operations such as initializing the variables, incrementing the display position, saving values for reference, etc. have to be assumed.

The procedure for translating a number into Chinese will be discussed in detail. As we saw earlier, the words wan⁴ and yi⁴ or wan⁴ wan⁴ can have multiples of tens, hundreds, and thousands, whereas shi², bai³, and qian¹ can have only single digit multiplication. It is convient to discuss the lower order (0 through 9,999) numeration first. The lower order numeration is done with the following procedure. In the statements if no specific direction of flow is mentioned, the procedure continues on the next step.

- (10) (a) Set ORDR equal to 3.
- (b) Divide the number to be processed by 10 to the power of ORDR.
- (c) If the integer result of the division is zero, then check to see if _____ is to be written and then go to step (e). Otherwise continue on the next step.
- (d) Write an appropriate Chinese word according to the result of division.
- (e) Calculate: (number to be processed) = (number to be processed) - (integer result x 10 to the power of ORDR).
- (f) If ORDR is 3, 2, 1, determine according to certain conditions if qian¹, bai³, shi² respectively is to be written.
- (g) Subtract 1 from ORDR. If ORDR is -1, end this routine. Otherwise go back to step (b).

Before we proceed to explain the detailed procedures for how the computer decides to write ling² and the appropriate Chinese words as required in steps (c), (d), and (f) above, it may be more useful to look at the general procedure for translating a number. The number in question is assumed to be lower than one trillion.

The procedures are the following:

- (11) (a) If the number is zero, then write ling2 and end the routine. Otherwise continue on the next step.
- (b) Divide the number by 10^8 . If the integer result is zero, then go to step (f). Otherwise continue on the next step.
- (c) Calculate: $\text{number} = \text{number} - (\text{result} \times 10^8)$.
- (d) Consider the integer result as the number to be processed. Do the lower order numeration.
- (e) Generate a random integer number. If it is even, then write the word yi4. Otherwise write the word wan4 wan4.
- (f) Divide the number by 10^4 . If the integer result of the division is zero, then check to see if ling2 is to be written and then go to step (j). Otherwise continue on the next step.
- (g) Calculate: $\text{number} = \text{number} - (\text{result} \times 10^4)$.
- (h) Consider the integer result as the number to be processed. Do the lower order numeration.
- (i) write the Chinese word wan4.
- (j) Consider the number as the number to be processed. Do the lower order numeration.

In the procedures random numbers are used to determine the choice of alternatives. Linguistically optional items are thus selected in the computer programs. This flexibility certainly helps the student to learn all the possible ways of expression.

Now we return to the details of some of the procedures referred to earlier. First of all, the decision as to whether the word ling2 is to be written or not is based on the following conditions:

- (12) (a) The number of the unit in question is zero.
- (b) There is a non-zero number occurring in the units higher than the unit in question.
- (c) The value of the units lower than the unit in question is not zero.
- (d) The word preceding the one in question is not ling2.

If all the conditions are met, then the word ling2 is written.

The writing of the Chinese words is based on the integer result of the division done in the previous processing. The Chinese words in Pinyin and in characters are written according to the following procedures:

- (13) (a) If the integer result of the division is zero, then stop.
- (b) If the result is not 2, then go to step (d).
- (c) If the result is a number for the tens unit, then write er4; go to step (e). Otherwise generate a random number; if it is even, write er4; otherwise write liang3; go to step (e).
- (d) If the integer result is 1, 3, 4, 5, 6, 7, 8, or 9, then write the corresponding Chinese word yi1, san1, si4, wu3, liu4, qi1, ba1, or jiu3.
- (e) Search for the Chinese word in the Chinese character storage and plot it.

Since er4 and liang3 alternate freely before the unit names other than shi2 and shi2 wan4, a random number is generated for the variation.

As already said in the numeration rules, under certain conditions the unit names shi2, bai3, and qian1 need not be mentioned. The choice is determined, as for other cases, by random numbers. The processing of the name shi2 is more complicated and will be given first as the following sequence:

- (14) (a) Generate a random number. If it is odd and if the original number to be processed is less than 20, then go to step (f).
- (b) If the random number is odd and if the integer result of the earlier division is 1, then continue on step (c). Otherwise go to step (e).
- (c) Generate two random numbers. If both are odd, then go to the next step. Otherwise go to step (e).
- (d) Write the Chinese word shi2 and stop.
- (e) Write an appropriate Chinese word according to the result of division.
- (f) Determine if the unit name is to be written according to certain general conditions.

The numbers 10 through 19 are more often said with the number word yil if they are part of larger numbers. For example, the use of yil in the following cases is more natural:

- (15) (a) 314 san1 bai3 yil shi2 si4 or
 san1 bai3 shi2 si4
- (b) 4516 si4 qian1 wu3 bai3 yil shi2 liu4 or
 si4 qian1 wu3 bai3 shi2 liu4

The natural impression is perhaps due to the specific mentioning of the number to resolve an uncertainty in listening to the numeration. At any rate, in the procedures we generate two random numbers and decide to write it without the word yil only if both numbers are odd. That is; by requiring two odd random numbers, we actually reduce the chances of occurrence of such a phrase.

The general procedures for deciding whether a unit name is to be written or not are the following:

- (16) (a) If both of the following conditions are not met, then write the unit name and stop. Otherwise continue on the next step.
- (i) The number of the units lower than the unit in question is zero.
 - (ii) The number of the units higher than the unit in question is not zero.
- (b) If the word last written is liang3, then write the appropriate unit name; stop.
- (c) Generate a random number. If it is odd, write the unit name. Otherwise do not write it.

Again, alternatives are selected according to the value of a random number. Speech variation is thus accounted for in the computer lesson.

The translation of Chinese phrases into numbers by the computer also follows certain well-defined procedures. Since the linguistic rules have already been stated, analyzed, and discussed above, the operation of translating phrases into numbers will not be presented here. One point needs to be mentioned, however. We realize that the Chinese phrases typed in by the student may contain illegal words as well as syntactic errors. Therefore the program provides an extensive diagnosis on the input string.

5. CHINESE CHARACTERS. The student is expected to be able to read and write the Chinese numeral characters when he completes the lesson. The section that introduces the vocabulary provides each word in Pinyin and in Chinese scripts. As each character is shown, the student has the option to choose to see the writing of it stroke by stroke. The duration of the pause between strokes can be adjusted by the learner by pressing certain designated keys.

To understand how a character is displayed on the PLATO screen and how a stroke is determined, we need to look at the design of Chinese characters on PLATO. As mentioned in Chen and Cheng (1976), Chinese characters are designed on a 16 x 16 grid. Strokes are made of straight lines. A straight stroke consists of one line; a slanting one consists of a number of short lines connected to form an appropriate curve. The computer representation of a line is a set of 4 numbers representing the beginning and end coordinates ($x_1, y_1; x_2, y_2$). As the PLATO alphanumeric characters are coded in octal 01, 02, 03, etc. beginning with the letter "a", the program for designing Chinese characters displays the coordinates in the 16 letters "a" through "p". Thus each coordinate is contained in a 5-bit segment. But as the coordinates are stored, each of them is subtracted by 1, and in the actual storage each is only 4 bit long. The 4-bit segment still allows for 16 distinct patterns.

To display a character, the computer program takes each four 4-bit segments from the storage as the coordinate pair (x_1, y_1) and (x_2, y_2). A line is then drawn between these two points. Drawing continues until the entire character is displayed. The number of lines of each character is also stored along with the coordinates. It should be obvious that the 16 x 16 grid is only an abstract resolution. In the actual display, the coordinates are scaled up or down to obtain various sizes of characters.

The storage actually consists of three areas: (a) the names of the characters in Pinyin, (b) pointers which relate the names and their coordinates, and (c) the meaning and the coordinates of each of the characters, which are of variable length. Each pointer (a 60-bit computer word) also contains the number of lines of the character. The meanings given can help identify the characters for the lesson author and serve in other minor ways in the lesson; they are not extensively used in presenting the meanings of the word to the student. The storage resides on a PLATO permanent common. A common is an area shared by all the students who use the lesson.

The names of the characters in the common are arranged in alphabetic order. To find a name in the common, a binary search is carried out in the following way. First, the name in the middle point is compared with the search object. If the object is alphabetically greater, then the lower half of the area can be discarded and a similar search can be done with the higher half. Similarly, if the object is alphabetically smaller, then the higher half can be ignored. The

search continues until the object is found or until the area is exhausted.

A common in our Chinese lessons usually contains about 200 Chinese characters. The binary search is fast enough to avoid a delay in response to the student. Once the name is found and its position in the area determined, we go to the same position in the pointer area to obtain the number of lines and the address of the coordinates.

To write a character stroke by stroke, the program has to be able to recognize the stroke boundary. Because of the nature of the design of the characters, it is easy to determine the end of a stroke. If the end coordinates of a line are the same as the beginning coordinates of the next line, then the lines are part of a stroke. In such a case plotting continues until the end point is not the same as the beginning point of the next line. The process is as follows:

- (17) (a) Get the beginning x_1 , y_1 , x_2 , and y_2 coordinates from the common storage.
- (b) Draw a line between the points (x_1, y_1) and (x_2, y_2) .
- (c) Store x_2 and y_2 in variables X and Y respectively.
- (d) Get the next 4 coordinates into x_1 , y_1 , x_2 , and y_2 from the common storage.
- (e) If $x_1 = X$ and $y_1 = Y$, then go back to step (b) immediately. Otherwise pause for a predetermined number of seconds and then go back to step (b).

Generally speaking, the display of a stroke on the PLATO terminal screen in the way just described can show the sequence of the strokes in writing. However, since the speed of line drawing is so fast that only very attentive students can see the direction of writing of short strokes. To remedy the situation, I have implemented another feature that writes the strokes in slow motion, so to speak. Instead of writing the whole stroke at one drawing, a line is divided into a number of points and the points are then connected together. Such a drawing shows the animated writing of the stroke, and thus the direction of pen movement is clearly displayed for the student. To locate the points, the slope of the line is calculated and then the points are determined by increasing (or decreasing) the appropriate coordinates along the axes. The procedure given in (17b) is now changed to the following sequence:

- (18) (a) Calculate the directions:
 $x\text{-direction } (XD) = x_2 - x_1$
 $y\text{-direction } (YD) = y_2 - y_1$

- (b) If the line is vertical (i.e. $XD = 0$), go to step (g). Otherwise continue on the next step.
- (c) If XD is negative, set increment (INC) equal to -1. Otherwise set it equal to +1.
- (d) Calculate the coordinates for the next point:
 $slope (SLP) = YD / XD$
 $abscissa (XX) = x1 + INC$
 $ordinate (YY) = (SLP \times XX) - (SLP \times x1) + y1$
- (e) Draw a line from the point $(x1, y1)$ to the point (XX, YY) .
- (f) If XX is equal to $x2$, the entire line is displayed; leave the line drawing routine. Otherwise set $x1$ equal to the value of XX and go back to step (d).
- (g) If YD is negative, set increment (INC) equal to -1. Otherwise set it equal to +1.
- (h) Calculate the next ordinate:
 $abscissa (YY) = y1 + INC$
- (i) Draw a line between $(x1, y1)$ and $(x1, YY)$.
- (j) If YY is equal to $y2$, then the entire line is displayed; leave the line drawing routine. Otherwise set $y1$ equal to the value of YY and go back to step (h).

This animated writing is operative only when the student is using a PLATO V terminal, which, in contrast with the PLATO IV terminal, has a micro-processor in it. The elaborated line drawing procedure is carried out by the terminal processor; the central computer is thus not demanded of the task to do such a time consuming operation.

6. CONCLUDING REMARKS. With regard to numbers, there may be a marked difference between writing on the one hand and speaking and listening on the other. Training in listening can be done on PLATO with the facility of the audio unit, and I have plans to implement this feature. As to automated analysis of numeration from voice input, it is something of the future.

NOTES

¹Hausen (1974:121) says that nil before any unit names can be omitted. My speech does not allow for the omission of nil except before shi2.

²Shangwu Publishing House (1971:129) gives the rules concerning the use of er⁴ and liang³ as follows: Before shi² and bai³, er⁴ is used, but before qian¹, both er⁴ and liang³ can be used. The exclusion of liang³ before bai³ is apparently a mistake.

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GLIDE *y* IN KOREAN HISTORICAL PHONOLOGY

Soo-Hee Toh

Three cases involving *y* in Korean historical phonology are examined: (1) *y*'s role in vowel harmony in Middle Korean, (2) gemination of *y*, and (3) monophthongization of diphthongs of the form *Vy*. It is argued here that *y* had an effect of neutralizing vowel harmony, that *y* gemination is not a case of consonant insertion to break up vowel hiatus but a case of progressive assimilation, and that monophthongization of *Vy* is but a part of a general process of palatalization.

1. In the vernacular literature, there are many articles written on various roles that glide *y* played in the history of Korean phonology (e.g., Huh 1952, S.-H. Lee 1954, K.-I. Lee 1972, W. Kim 1964, Toh 1977). Although some of these works express different and sometimes even opposite views, all seem to agree that *y* played a rather important and dynamic role in the phonological history of Korean. For example, certain consonants, notably *k*, *s*, and *p*, were weakened and eventually deleted after *y*, palatalization occurred after *i* and *y*, and *y* triggered umlauting (vowel fronting). In this paper, I will try to describe and explain a few as yet unobserved or not satisfactorily explained phonological phenomena involving *y* in diachronic Korean; namely, the function of post-vocalic *y* in vowel harmony in Middle Korean, *y* gemination, and monophthongization of *Vy*.

2. Discussions of vowel harmony in Middle Korean have traditionally excluded the function of *y*. It was assumed that *y* in either *yV* or *Vy* did not affect the operation of vowel harmony in the nucleus vowel. This is understandable on one hand since prevocalic *y* didn't indeed disrupt vowel harmony. But on the other hand, in view of the fact that *i* is a neutral vowel with respect to vowel harmony (as in some vowel harmony languages like Mongolian and Finnish) and that *i* and *y* are phonetically similar and even behave similarly phonologically (e.g., in palatalization, umlauting, etc.), such an assumption seems rather strange.

The following table summarizes the vowel harmony patterns in Middle Korean:

Harmonic class	simple vowels	diphthongs
"light" vowels	ㅏ ㅓ ㅗ	ㅗㅛ ㅓㅜ ㅗㅜ
"dark" vowels	ㅓ ㅕ ㅛ	ㅓㅛ ㅕㅜ ㅛㅜ
Neutral vowel	ㅜ	

Distinctive features that would divide these harmonic classes in what appears to be a "diagonal" vowel harmony system into natural classes are not our concern here (cf. C-W. Kim 1976). What is to be noted is that, unlike in Mongolian where the neutral vowel *i*, which can follow either a front vowel or a back vowel, can be followed by only a front vowel, Middle Korean *i* was completely neutral as can be seen in the following examples:

harimi-rar 'grandmother' (Acc)	api-nan 'father' (Topic)
acami-rir 'aunt' (Acc)	emi-nan 'mother' (Topic)
meri-rar 'head' (Acc)	cip-in 'house' (Topic)
syomin-ir 'people' (Acc)	uri-nan 'we/us' (Topic)
sin-ay 'god' (Loc)	him-aro 'force' (Instr)
sim-ey 'mind' (Loc)	potyeysim-iro 'mercy' (Instr)
rim-ay 'forest' (Loc)	kir-haro 'road' (Instr)
zir?-ey 'day' (Loc)	ip-iro 'mouth' (Instr)

Since *i* is neutral with respect to vowel harmony as was exemplified above, and since *i* and *y* are phonetically and phonologically similar in many ways, one might ask if *y* behaved in any way like *i* in vowel harmony.

King Seijong, who invented the Korean script *hankul* in 1443, specifies clearly in his *hwarinseongun-haylyey* (annotated examples of *hankul*) that complex vowels with prevocalic *y* (*yV*) behave exactly like simple vowels (monophthongs) in vowel harmony. Examples also show that the harmony is kept between vowels in *V-Vy* (= morpheme boundary). These cases undoubtedly contributed to a sweeping generalization that *y* had no effect on vowel harmony. But what has not been examined carefully is vowel harmony in *Vy-V*. Here, we find many examples that appear to violate the vowel harmony rule: Thus, alternations of the following kind

suruy-nan ~ suruy-nin 'wheel' (Topic)
coy-rar ~ coy-rir 'crime' (Acc)
mithiy-nan ~ mithiy-nin 'low part' (Topic)
syuy-rar ~ syuy-rir 'ray' (Acc)

are found abundantly in the fifteenth century texts which otherwise observed strict vowel harmony. (Statistically, there are a vastly more number of examples of "light" suffix vowels after the stem-final *Vy* than of "dark" vowels, indicating that the direction of neutralization here was toward "light". This is puzzling, because in Modern Korean where vowel harmony is almost lost, harmonic classes merge into "dark" rather than "light" series. See Toh 1970 for some discussion and detailed statistical analysis.)

It was assumed traditionally that these examples were inexplicable vowel harmony violations and, furthermore, that these violations might indicate the beginning of the monophthongization process of complex vowels (*Vy*), implying that vowel harmony violations were due to the changed vowel quality in the nucleus vowels before *y* in diphthongs.

This view, however, is rather unpersuasive. Historically, the monophthongization process occurred later (18th century) than the texts in which these examples are found (15th c). Furthermore, if a disruption in vowel harmony began with monophthongization of diphthongs, why didn't the same process occur in $V-Vy$ as it did in $Vy-V$? In other words, if both light and dark vowels are found after Vy because the quality of the nucleus vowel in Vy has changed either through umlauting or monophthongization and no longer required strict observation of vowel harmony with the following vowel, why can't Vy follow any vowel, light or dark?

Such differential behavior can be explained if we assume that y , like i , possessed a neutralizing quality. Vowel harmony being a process of progressive assimilation, its observance in $V-Vy$ is natural, while its violation in $Vy-V$ can also be explained in a natural way in terms of y 's intervention in the vowel sequence, thereby neutralizing vowel harmony.

Not incidentally, for this post-vocalic y to be a vowel harmony neutralizer, it must be assumed that the complex vowel sequence Vy was a diphthong, not a monophthong, for y is deleted simultaneously with monophthongization, e.g., $ay \rightarrow a$, $ey \rightarrow e$, $oy \rightarrow o$, etc., and therefore monophthongized vowels would no longer have y , an i -like semi-vowel.

3. One of the functions of y in Middle Korean was thought to be that of a consonant inserted between two vowels to break up a hiatus (S.-N. Lee 1947). A careful examination of Middle Korean texts shows, however, that such a generalization cannot be maintained. Examine the following:

Locative	Nominalizer	Adverbial
cyægsa-ay 'pavilion'	na-am 'going'	sa-a 'to buy'
toŋto-ay 'east capital'	no-om 'seeing'	sso-a 'to shoot'
sa-ay 'temple'	ha-om 'doing'	tha-a 'to receive'
cyæŋkæ-ey 'nirvana'	syæ-əm 'standing'	nyæ-ə 'to go'
cwau-ey 'both sides'	tu-um 'leaving'	iru-ə 'accomplish'
særi-yæy 'crowd'	khî-um 'growing'	psî-ə 'to use'
noray-yæy 'song'	pskîri-yom	ti-yæ 'to fall'
syæy-yæy 'generation'	~pskîri-yum 'embracing'	nay-ya ~ nay-yæ
soy-yæy 'iron'	ponay-yom 'sending'	'to choose'
kuy-yæy 'ear'	tʰoy-yom 'becoming'	tʰoy-ya 'to become'
kəkîy-yæy 'there'	mʰay-yom 'tieing'	koy-yæ 'to love'
pay-yæy 'boat'	hyæy-yom 'calculating'	karhʰay-ya ~ karhʰay-yæ
amokî-æy 'anyone'	syæy-yum 'setting'	'to choose'
	pichuy-yom 'shining'	pskey-yæ 'pierce'
	yehîy-yom 'parting'	muy-yæ 'to move'
	~ yehîy-yum	yehîy-yæ 'to part'

These examples can be summarized in the form of a table as follows:

Stem-final vowel	Suffix vowel in		
	Locative	Nominalizer	Adverbial
a	ay	am	a
o	ay	om	a
ʌ	ay	om	a
ə	əy	əm	ə
u	əy	um	ə
ɪ	əy	um	ə
i	yəy	yom yum	yə
ay	yəy	yom	ya yə
oy	yəy	yom	ya yə
ʌy	yəy	yom	ya yə
ey	yəy	yom yum	yə
uy	yəy	yom yum	yə
iy	yəy	yom yum	yə

Two patterns emerge from this table. One which is not our concern here is a non-random alternation between *yom* and *yum*, and *ya* and *yə* (See Cheun 1975 for an interesting discussion of these alternations), and the other is the alternation between suffixes beginning with a vowel and those beginning with *y*. From the table, it is clear that these alternant forms are determined by the shape of the stem-final vowel in such a way that *y* is attached onto the beginning of a suffix if and only if the stem-final vowel is a diphthong ending in *y*, i.e., *y* is geminated. It is difficult to believe that such gemination or doubling of *y* is done in order to avoid hiatus, especially because there is no *y* insertion at all between two simple vowels, e.g., between the stem-final monophthong and Adverbial affix. Granted that in such a case, two consecutive vowels often produce one long vowel making *y* insertion unnecessary, but gemination of *y* is still unexplainable in terms of hiatus breaking. One might argue that this is a case of hiatus breaking if one assumes that the stem-final complex vowels have become monophthongized, and indeed the traditional view is based on this assumption. Until recently, it was erroneously assumed that complex vowels were phonetically monophthongs in Middle Korean because the same orthographic forms are pronounced as monophthongs in modern Korean. It has since been proven that monophthongization took place in the 18th century. This means that all complex vowels had diphthongal sound values in Middle Korean. *y* gemination, therefore, must be explained from a different point of view. My own view is that this glide gemination is a case of progressive assimilation, i.e., the suffix-initial vowel takes on *y* in assimilation to the immediately preceding stem-final *y*.

4. I now turn to *y*'s role in the monophthongization process. Here I will question neither the truth nor the chronology of such a process in Korean historical phonology. My attention is rather directed to the following questions:

a. What motivated/prompted monophthongization?

b. Monophthongization took the form of vowel fronting; thereby producing a new series of front vowels. Why was vowel fronting limited to diphthongs? Couldn't new front vowels come from something else?

c. Is monophthongization a process of "vowel contraction" as is traditionally believed? If it is something else, what?

It is generally assumed that the vowel system of Korean underwent a great vowel shift sometime in early Middle Korean period (cf. W-J. Kim 1963, K-M. Lee 1972). This shift in general took the form of retraction of non-high front vowels in the initial stage. This must have left a large space empty in the front (left-side) of the vowel system, creating a phonetically quite unstable and unbalanced state. It is extremely appealing to speculate that it is into this room (hole) that diphthongs moved via monophthongization, producing a new series of front vowels, and consequently a more balanced and optimal vowel system, in the process. Such teleological explanation, however, is dangerous to entertain in historical phonology (cf. Anttila 1972). I am not certain that a sound change occurs in order to achieve a specific purpose or to obtain an a priori well-defined goal. Rather, it must happen because phonetic environments condition it to happen whether or not it accomplishes some noble aim. This is not to say that there is no case of sound change which is motivated by some universal principles governing the general laws of language, e.g., rule application, rule reordering, etc. (cf. Kiparsky 1968).

My view of monophthongization of diphthongs in Middle Korean is that it happened not necessarily in order to create a new series of front vowels but as a part of a general process of palatalization that occurred in pre-Modern Korean. As is well known, palatalization of consonants in the environment of i/y occurred in the middle of the 17th century. I regard monophthongization as a case of palatalization of vowels. In this view, palatalization becomes an extremely general rule that applied to both consonants and vowels in the same environment of i/y.

A teleological view that monophthongization occurred in order to create new front vowels cannot explain why they couldn't come from some other sources besides diphthongs, nor can it explain why all diphthongs, not only those that gave rise to desired front vowels, monophthongized. Notice that such generalized monophthongization process created some phonologically not so desirable vowels as well as desirable ones. Thus, as a result of monophthongization of *uy* and *oy*, Korean acquired "marked" front rounded vowels, and monophthongization of *ɛy* created a case of "absolute neutralization" between the new *i* < *ɛy* and the old *i*.

That the monophthongization process applied to all complex vowels inspite of these "complications" indicates that it was more a phonetically determined process than a phonologically motivated rule.

No doubt, phonological systems constantly strive toward achieving more ideal and optimal states, but it cannot override natural phonetic processes in the course. Phonological states are by-products of phonetic processes, not a motive force that sets phonetic processes into motion. A natural riverbed is not formed in order to draw water into it; rather, it is formed as a result of the flow of water. Monophthongization did not occur to fill an empty space in an unbalanced vowel chart. It occurred because the input string met the structural description of the rule of palatalization.

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VOWEL LENGTH IN KOREAN

CHIN-W. KIM

The role of vowel length in Korean is examined. It is shown that, although its functional load as a suprasegmental phoneme is marginal, it is an important factor in determining several phonological alternations in Korean, in particular, in anomalous verb conjugation, in devocalization, and in deletion of vowel \dot{a} . It is argued also that abstract underlying representation and a global rule application are necessary to account for certain phenomena involving vowel length.

In Modern Korean, there are pairs of words that contrast in meaning solely due to differences in vowel length, for example,

- | | |
|-----------------|--------------------|
| (1) mal 'horse' | cək-ta 'to record' |
| ma:l 'speech' | cə:k-ta 'be small' |
| pyeŋ 'bottle' | chi-ta 'to strike' |
| pye:ŋ 'illness' | chi:-ta 'run over' |

The repertoire of such examples, however, is limited, and, like the phonemic status of /ɜ/ or /ɪ/ in English, vowel length has occupied a marginal status in Korean phonology.

The purpose of this brief paper is to show that there is much more to it than is apparent on surface in the role that vowel length plays in Korean. In particular, it will be shown that vowel length has a trade-off relationship with lexical length, and that it is a determining factor in devocalization and deletion of vowel \dot{a} . Along the way, it will be argued that it is necessary to postulate a rather abstract form of underlying representation and application of a global rule in order to derive certain forms correctly.

To begin, examine the following examples of two representative classes of the so-called 'anomalous' (irregular) predicates in Korean.

(2) t-irregular

- | | |
|----------------------|-------------------------------|
| kə:t-tá 'to walk' | kə:t-ko, kə:-e, kə:-ini, etc. |
| mu:t-ta 'to inquire' | mu:t-ko, mu:-e, mu:-ini, etc. |
| nu:t-ta 'to scorch' | nu:t-ko, nu:-e, nu:-ini, etc. |

cf. t-regular

- | | |
|---------------------|------------------------------|
| kət-ta 'to roll up' | kət-ko, kət-e, kət-ini, etc. |
| mut-ta 'to bury' | mut-ko, mut-e, mut-ini, etc. |

p-irregular

ko:p-ta 'be pretty'	ko:p-ko, kow-a, kow-ini, etc.
ku:p-ta 'roast'	ku:p-ko, kuw-a, kuw-ini, etc.
shi:p-ta 'be easy'	shi:p-ko, shiw-a, shiw-ini, etc.

cf. p-regular

kop-ta 'to fold'	kop-ko, kop-a, kop-ini, etc.
ip-ta 'to wear'	ip-ko, ip-a, ip-ini, etc.

These examples show that 'anomalous' predicates -- called 'anomalous' because the stem-final consonants behave unpredictably before vowel-initial affixes -- contain long stem vowels while regular ones have short vowels. One might wonder then what anomaly there was to speak of if the alternation of the stem-final consonant is phonetically determined by the length of the preceding vowel. One reason is that many traditional Korean grammarians were reluctant to assign such an important role as determining 'anomalous' conjugations to such a marginal phonological feature as vowel length. Another more obvious reason was that, to regard vowel length as the sole determinant of anomaly in predicate conjugations, there were too many exceptions. Thus, although C-W. Kim (1971) was the first to examine the classes of anomalous verbs in depth and claim that they are not anomalous at all, he did so by postulating different underlying segments for irregular stem-final consonants from the regular ones and then by invoking the 'principle of close articulation' to explain neutralization between the two in preconsonantal environment. It was only in 1973 that vowel length was considered as playing an important role in irregular predicates (Lee 1973; Kim-Renaud 1973). Even here, exceptions were left unexplained.

Exceptions are of two kinds: one genuine and the other superficial. The former includes several lexical items that behave anomalously although their stem vowels are short (e.g., *tst-ta* 'to listen', *okun-ta* 'be cold'), and, conversely, those that show regular patterns despite a long stem vowel (e.g., *u:c-ta* 'to laugh'). Although a diachronic explanation can be found for these exceptions, they will probably have to be recognized as genuine exceptions in synchronic phonology if the length of the stem vowel is made to be the governing factor in anomaly. The second class of exceptions involves polysyllabic stems as given in the following:

- | | |
|----------------------------|---------------------------|
| (3) kketat-ta 'to realize' | tukkəp-ta 'be thick' |
| ilkhət-ta 'to name' | aləmtap-ta 'be beautiful' |

These words are also irregular predicates (the stem-final *t* and *p* alternate with *r* and *w*, respectively as in (2)). But note that the last vowel of the stem here is not long. But this can be easily explained by a general rule in Korean that shortens long vowels in all non-initial syllables within a word, as is exemplified in the following.

- | | |
|----------------------|-----------------------------|
| (4) nol-ta 'to play' | ttwi-nol-ta 'jump and play' |
| pa:lp-ta 'step on' | cis-ppalp-ta 'to trample' |
| tə:cəp 'hospitality' | phu-təcəp 'inhospitality' |
| sa:ləm 'man' | nun-salam 'snowman' |

Thus, if we apply the non-initial syllable vowel shortening rule, the kind of exceptions in (3) will cease to be exceptions.

A more serious problem is the length alternation in the stem vowels of anomalous predicates when they occur with various affixes. For example,

- (5) tə:p-ta 'be warm', tə:p-ko, tə:p-ci; təw-ini, təw-əse, təw-imyən
mu:t-ta 'to ask', mu:t-ko, mu:t-ci; mur-ini, mur-əse, mur-imyən

These examples appear to indicate that the stem vowel in anomalous predicates maintains its length only before a consonant-initial affix, and that it is shortened before an affix beginning with a vowel. From a universal phonetic point of view, this is rather difficult to explain, for, *ceteris paribus*, a vowel should tend to be longer before a voiced vowel than before a voiceless consonant (cf. systematic variations in vowel length in such English words as *his* vs. *hiss*, *bead* vs. *beat*, etc.). Furthermore, the following examples show rather clearly that the alternation in vowel length in (5) is related not so much with the nature of the initial segment of the following affix as with the number of syllables in the affix.

- (6) ka:m-ta 'wash hair' kam-ki-ta (Passive/Causative)
a:l-ta 'to know' al-li-ta
ki:l-ta 'be long' kil-i-ta 'to lengthen'
no:l-ta 'to play' nol-li-ta 'to kid, jest'
to:l-ta 'to turn' tol-no-ta 'to look back'
kke:-ta 'to awaken' kke-tat-ta 'to realize'

I think it is an accident that many one syllable affixes begin with a consonant, while many polysyllabic affixes begin with a vowel, and that a more reasonable view is that vowel length is not a function of the initial segment of the affix but is in inverse relation with the length of the affix. Such a trade-off relationship between vowel length and the word length is not surprising. In speech production, there is a tendency to make the same phonological units (a syllable, a word, or a "foot") be of equal length. What is called 'compensatory' lengthening/shortening, Lehiste's finding that such English words as *stay* & *stayed*, and *stead* & *steady*, etc. are of equal duration, are examples of this tendency (Lehiste 1970)

Examine next the following examples of devocalization (glide formation).

- (7) po-a → pwa 'to see' cu-ə → cwe 'to give'
pi-ə → pyə 'to cut' o-a → wa 'to come'
tu-ə → twe 'to leave' teli-ə → telyə 'to bring with'

In general, a vowel is devocalized to a glide in front of another vowel which is lower in height. In this case, a front vowel devocalizes into *y*, the back vowel into *w*.

Another relevant rule that we have to introduce here for our discussion is an intervocalic glide deletion rule as is exemplified below.

- (8) co:h-a → co-a 'be good'
to:p-a → tow-a → to-a 'to help'

Given these two independently motivated rules in Korean, one might ask if the output of the glide deletion rule is further subject to devocalization rule. The answer, as far as the examples given in (8) are concerned, is no. That is, *coa* and *toa* are not further contracted to *cwa* and *twa*, although *poa* to *pwa* and *tuə* to *twə* are perfectly permissible as shown in (7).

An initially appealing way to describe this phenomenon is in terms of rule ordering. That is, if devocalization rule is ordered to apply prior to glide deletion rule, *co-a* will not devocalize to *cwo*, for at the time when devocalization rule applies, the intervocalic *h* has not been deleted yet, thereby blocking the application of devocalization rule. This solution, however, is not workable because of the following kind of examples:

- (9) noh-a → no-a → nwa 'to put, leave'
chuw-ə → chu-ə → chwe 'be cold'

These examples show that the output of glide deletion is still subject to devocalization. That is, in order to derive the forms in (9), the order of the two rules must be glide deletion before devocalization. This is exactly the reverse of the order suggested above to account for the forms in (8). How can we get out of this dilemma?

A careful examination reveals that the stem vowel in (8) is long, while that in (9) is short. This means that devocalization is dependent upon the vowel length of the stem, i.e., a short vowel may devocalize in front of a lower vowel, while a long vowel may not. Since a long stem vowel is shortened in front of a polysyllabic affix which frequently begins with a vowel, this may result in neutralization in vowel length in some stage of derivation. In such a case, the stem vowel will no longer be able to provide the crucial information as to whether or not it can be devocalized. However, by ordering devocalization before vowel shortening, and by requiring the former to apply only to a short vowel, we will be able to derive correct forms as the following derivation shows:

- | | | | |
|------|-------|--------|------------------|
| (10) | noh-a | co:h-a | |
| | noa | co:a | glide deletion |
| | nwa | --- | devocalization |
| | --- | coa | vowel shortening |

In this connection, the following examples are quite instructive. There is a class of polysyllabic stems that belong to 'anomalous' predicates. The vowel of the final syllable, however, is never long but always short.

- (11) kanciləp- 'be itchy'
alimtap- 'be beautiful'
silkilop- 'be wise'

For these examples to belong to a class of irregular predicates, the last stem vowel must be considered to be long underlyingly. Note, however, that examples in (11) are different from those given in (2) in that in no case is the last stem vowel in (11) surfaces as long, while in (2), the monosyllabic stem vowel alternates between long and short depending upon the following affix. Since the last stem vowel in (11) never alternates, this is a case of 'absolute neutralization', and therefore, even though the rule that shortens long vowels in non-initial syllables can take care of the stem-final vowels in (11) even if they were specified long, it would be nothing but a case of an unmotivated 'free ride'.

But when we examine the behavior of the final syllables in (11) with respect to devocalization, the picture changes, for, although the vowel in these syllables never surfaces as long, it also never devocalizes. Recall that only a long vowel can prevent itself from being devocalized. This means that in order to prevent the devocalization rule to apply to (11), its last stem vowel must be posited as underlyingly long although a long vowel is never realized in this environment. This then is a case of postulating a quite abstract form of underlying representation despite absence of any alternant bearing the posited shape (absolute neutralization).

Examine now the following:

- (12) ta:h-*ini* 'to touch' → ta:-ni ~ ta-*ini*
 co:h-*ini* 'be good' → co:-ni ~ co-*ini*
 ci:z-*ini* 'to build' → ci:-ni ~ ci-*ini*

What these examples show is that whenever a long vowel is immediately followed by *é* (a high central vowel -- it has in Korean somewhat like that of the schwa vowel in English), *é* is deleted, unless the preceding vowel is shortened, in which case it remains. The following examples show that *é* may be deleted after a short stem vowel as well:

- (13) na-*ini* → na-ni 'to produce'
 ka-*ini* → ka-ni 'to go'
 o-*ini* → o-ni 'to come'

The difference between (12) and (13) is obvious: the long stem vowel remains long, while short stem vowels stay short, when the following *é* is deleted. The fact is, however, not so simple and straightforward as this. The problem is that *é* deletion is only optional in (12) while it is obligatory in (13) and that when *é* is not deleted in (12), the stem vowel becomes short. That is,

- (14) ta:h-*ini* → ta:ni ta^hni 'to touch'
 na-*ini* → nani *na^hni 'to produce'

How shall we account for this differential behavior between ta:h-*ini* and na-*ini*? Since *é* deletion appears to be dependent upon the length of the preceding vowel, in the sense that *é* must delete after a short vowel but may remain after an (underlyingly) long vowel, we may order *é* deletion

and vowel shortening in such a way that \acute{e} is first deleted before the preceding vowel is shortened, as in the following derivation:

(15)	ta:h- \acute{e} ni	na- \acute{e} ni	Underlying
	ta:- \acute{e} ni	---	Glide deletion
	ta:-ni	---	\acute{e} deletion (after a long V only)
	---	---	Vowel shortening
	ta:ni	*na \acute{e} ni	Surface

This ordering generates *ta:ni* and **na \acute{e} ni*, but neither *ta \acute{e} ni* nor *na \acute{e} ni*. We might try to remedy the situation by relaxing the rule environment of \acute{e} deletion. While this will give *na \acute{e} ni*, the original motivation for ordering \acute{e} deletion before vowel shortening disappears, for that particular ordering was chosen just so that \acute{e} deletion would be made conditional upon the length of the preceding vowel. This being the case, one might as well reverse the relative order of the two rules:

(16)	ta:h- \acute{e} ni	na- \acute{e} ni	Underlying
	ta:- \acute{e} ni	---	Glide deletion
	ta- \acute{e} ni	---	Vowel shortening
	ta-ni	na-ni	\acute{e} deletion
	*tani	nani	Surface

This solution, however, still does not give *ta \acute{e} ni*. The problem is that at the stage when \acute{e} deletion applies, both words have the same input form (except the initial consonant) *-a- \acute{e} ni*, and there is no formal way to block \acute{e} deletion in one case (*ta \acute{e} ni*) but not in the other (*na \acute{e} ni*).

We see then that rule ordering does not help us to get the desired form *ta \acute{e} ni* in any arrangement. The dilemma is that if we delete \acute{e} before vowel shortening, we have *ta:ni* but neither *ta \acute{e} ni* nor *na \acute{e} ni*, and if we apply vowel shortening before \acute{e} deletion, we get *nani* but also **tani*.

Note that the well-formed alternant forms of *ta:h- \acute{e} ni*, i.e., *ta:ni* and *ta \acute{e} ni*, conform with the observation we made earlier when discussing vowel length alternation in 'anomalous' predicates with respect to the number of syllables of the following affix such that a long stem vowel retains its length in front of a monosyllabic affix but loses it before a polysyllabic affix. It seems that \acute{e} deletion is also intricately related to the length of the stem vowel, for \acute{e} is deleted if the stem vowel retains its length, but remains when the stem vowel is shortened. Since \acute{e} is obligatorily deleted when the preceding vowel is underlyingly short, but remains when the preceding vowel is underlyingly long, but since at the time when the \acute{e} deletion rule applies, the long vowel has already been shortened, it implies that the \acute{e} deletion rule must be able to have access to the derivational history of the relevant forms for its

correct application so that the deletion of \acute{e} will be prevented after a vowel just in case it was underlyingly long. This is of course a case of a recently much discussed 'global' rule application. Korean seems to provide a good example with interaction between vowel length and \acute{e} deletion.

In sum, we have seen several cases in which vowel length plays an important role. It has been shown that, far from being a marginal suprasegmental phoneme whose function is manifest only in a limited number of vocabulary items, vowel length is intricately and intimately related with other phonological phenomena in Korean, namely, the so-called anomalous predicates, word length, devocalization, \acute{e} deletion, etc. It was argued along the way that abstract underlying representation of vowel length (despite its resemblance of a case of absolute neutralization) and the principle of a 'global' rule application are necessary for correct generation of certain surface forms.

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REVIEWS

El concepto de norma en lingüística. Luis Fernando Lara. (Estudios de lingüística y literatura 5.) Mexico D.F., El colegio de Mexico, 1976. 148 pp. in small 8°. Price not stated.

Reviewed by Ladislav Zgusta

Discussions of the linguistic norm attract little attention and less favor, this side of the Rio Grande del Norte. At the same time, everyone who deals with standard language must either try somehow to cope with the norm, or continue the Johnsonian tradition of making choices without a (stated) principle. Our author, being director of the huge project of a Mexican Spanish dictionary, reasonably writes this book as a theoretical preparation for his task. He sees, quite correctly, that there are two main understandings of the linguistic norm. First, the norm is what is usual or habitual (e.g. Zwirner). Second, the norm is the prescription of what should be (e.g. school grammars).

Few theoretical linguists have offered an opinion on the subject. Trubetzkoy, caught in the Saussurean dichotomy of parole and langue decided that the norm pertains to the former; which, may we say, is not particularly illuminating. Hjelmslev went beyond this dichotomy: the system of language is purely oppositional, is constructed without reference to substance; form referred to substance is the norm. For example, in the system of Spanish, the abstract phoneme /s/ is defined by its opposition to the other phonemes. When we say that /s/ is a sibilant, we are talking about the norm of Spanish. When we describe the various local pronunciations (dental, palatal), we are talking about local usage. Clearly we shall be allowed to say that the Hjelmslevian understanding has little connection with the general understanding of the term 'norm'.

This comes back with Coseriu, for whom the norm (social or individual) is a constant variant within the system. For example, the different pronunciations of -ll- in Northern Spain, Southern Spain, Mexico, Argentina, etc. belong to various social norms. Since these variants are constant, the norm does not belong to the parole. For Havránek, to speak a language implies the necessity to conform in speech to the general pattern of other speakers. This conformation is the objective, unconscious norm; when put on paper by the linguist, it becomes the codified norm. Which statement will have a strong appeal to every descriptivist heart. Only, we are sorry to say real life is not so neat as these dichotomies. The codified norm is not simply the objective norm captured and revealed, there usually are elements of (prescriptive, pardon me) fiat in it.

For Heger, the norm is the (prescientific) capacity of the speaker to form an unconscious judgement concerning the acceptability of his speech. This seems to be a good approach, but it does not take into consideration the social, interpersonal factor. Lara agrees with Heger that the norm is

a metalinguistic judgement of acceptability, based (with Coseriu) on the historically given system of language. However, the judgement is based on the 'constant and obligatory evaluation of the linguistic product' by its purpose. A useful Praguan principle, nobody will deny, that allows switching of norms with changing registers and blocks the idea of one single, stifling, rigid, static norm of the fully prescriptive-puristic type. On the other hand, continues our author, there also are the codified norms, but they are sociolinguistically founded.

I think this is the best point of the book: the demonstration of these two different sources of norms per se (function) and codified norms (sociolinguistic considerations). One could squabble about minor points, e.g.: is the codified form really founded on sociolinguistics, or rather on the unconscious norm per se, with sociolinguistic considerations added? One could regret that only contemporary theoreticians are discussed, not the old practitioners, such as, say, Vaugelas, or the contemporary standardization of languages and language planning. In any case, the book has the indisputable merit of developing a theory of the norm which transcends the Praguan simplicity by allowing different sources for different types of norms thereby becoming more true to life.

Studies in Functional Syntax/Etudes de syntaxe fonctionnelle. By André Martinet. München: Wilhelm Fink Verlag, 1975. Pp. 275.

Reviewed by Frederic M. Jenkins

This is Martinet's fourteenth book-length endeavor, either as editor or full-fledged author, since the beginning of his 40-year career as a prominent figure in the field of linguistics. It follows the format of two of his most recent volumes, La Linguistique synchronique, études et recherches (Paris: P.U.F., 1965) and Le français sans fard (P.U.F., 1969), in that it is a collection of his articles that have appeared for the most part in a variety of scholarly and semi-scholarly periodicals published throughout the world. In this particular case, there are 23 articles (only two of which were written specifically for this volume), having originally appeared between 1956 and 1973 -- the vast majority during the '60's; eight are in English, with résumés in French in a final appendix; the rest -- 15 -- in French, with corresponding résumés in English.

M.'s subject matter is, obviously, "functionalism", his counterpart of Chomsky's TG grammar, Lamb's stratificational grammar, Bloch and Harris' distributional structuralism, Hjelmslev's immanency, and the like. Exactly what this term means never quite comes through clearly to the average reader, in my opinion, despite considerable redundancy of statement and of illustrative examples in article after article. Supposedly it concentrates on reality, actually attested examples of language behavior (i.e. performance), yet it is not, M. claims, simply a restatement of the structuralism of the '30's, '40's, and '50's. Its ultima ratio is "the principle of relevancy" (10); in its briefest form, it can perhaps be defined as "the study of human language in itself and for itself" (11), a statement with which, obviously, hardly anyone would quarrel. It has phonology, morphology, and syntax, as do most theories; but, unfortunately, M. doesn't go much beyond the generalities he has been espousing for years now: double articulation (phonology + all the rest), monemes (minimal signs, but not American "morpheme", because based on slightly different criteria), syntemes (syntactic units of surface structure, like 'headache'), and so forth. If we only had a full-fledged description of some reasonably well-known language couched in Martinetian terms, we might be in a better position to judge the worth of his theory: apparently a single example does exist -- Denise François' Le français parlé d'Argenteuil (Paris, SELAF, 1974) -- but I have been unable to see it. There exist a few others on rarer languages: a Basque dialect, Mbom, Houaïlou, Fataluku. In the absence of a great deal of concrete evidence, we should perhaps withhold final judgement on the value of "functional" descriptions, but frankly, I remain skeptical as to their ultimate worth, except perhaps as simple depositories of data.

M., on the other hand, is not one to withhold judgement on contemporary (and near-contemporary) theories. Throughout the volume he never hesitates to castigate American linguists in general and TG grammarians in particular.

He is especially bitter about the international success of theories developed on this side of the Atlantic: "What has been detrimental to the progress and spread of functional linguistics is the existence of an American linguistic imperialism which tends to convince specialists the world over that everything boils down to a conflict between distributionalism, simplistic and largeley overcome, and generativism, with its successful selling techniques, its logico-mathematical apparatus and catching (sic) terms and phrases such as 'creative' and 'deep structure'" (9).. His prejudices run deep: "After fifteen years, the hypotheses of the new-comers (= TG grammarians), meant to remedy the limitations of their predecessors, remain just as unverified as they were to start with. With both parties, we find the same rigidity mistaken for rigor, the same incapability of grasping language in its multifarious reality, with its fringes, imperfections, variations in society, space and time" (10). Whether one agrees or not with these assessments, no one will dispute M.'s opening statement: "So far linguistic functionalism has had the good fortune of never being really fashionable" (9); unfortunately, he never pauses to examine the reasons for this!

American linguists of TG persuasion will be interested nonetheless by his lengthy discussion of Fillmore's theory of cases ("Cases or functions?", 216-232), as it appeared in its initial formulation. Naturally, we would expect functionalism to win out in the end, but, surprisingly enough, given the tenor of most of the book, M. does grudgingly acknowledge that F. may have stumbled on to something of value -- but only because it is at variance with the TG tradition: "The great merit of Fillmore is his questioning the universal character of the subject-predicate pattern" (218). However, since F. is American, he cannot possibly be 100% right: "The term 'case' being applied to all substantival functions, one has to determine the universals of case, in deep structure, of course. For a functionalist, this is a non-linguistic problem implying an examination of the relations of man to the surrounding world..." (224). Further, F.'s terminology is faulty: "The terms chosen for the cases are not always felicitous: 'dative' normally evokes the beneficiary and cannot be considered a satisfactory designation of the animate patient case; 'objective' sounds too much like 'object' and is the more dangerous because Fillmore's objective is so often identical with the object of 'surface structure'" (225). Still, overall, M.'s article is worth reading, if only for the few new insights he gives us on his view of syntactic structure.

In the final analysis, one really wonders what the justification is for this third collection of M.'s articles: their supposed unavailability to the general public interested in the technical aspects of linguistics, or simply another excuse to attack (mainly with generalities) those who disagree with his own ideas. I opt for the latter explanation and consider it not at all to M.'s credit. Beyond this rather basic flaw, one could easily cite other objectionable aspects of the volume: repetitiveness from article to article (one gets the impression that M. believes that restating a fundamental concept will somehow make it "right" or "real"); considerable unevenness of level of discussion ("A Functional View of Grammar", 82-88, seems to have been written for absolute newcomers to linguistics, whereas "Le genre féminin en indoeuropéen", 247-259, in itself an interesting article, is most definitely

written for specialists); plus a few other minor objections that shall remain unspecified here. Let's face it: all of us are good at some tasks and not as good at others; in M.'s case, he could do better to concentrate on historical linguistics (cf. his seminal -- but still controversial -- Economie des changements phonétiques, Berne: A. Francke, 1955), non-technical observations on contemporary French (La Prononciation du français contemporain, Paris: Droz, 1945; recently reprinted), and other topics of a fairly specific nature (e.g. his outstanding treatment of the concept of "word" in the volume under review: "Le Mot", 161-175).

Whistled languages. By RENÉ-GUY BUSNEL and ANDRÉ CLASSE. Berlin, Heidelberg, and New York: Springer-Verlag, 1976. Pp. vii, 117. [=K. S. Fu, W. D. Keidel, and H. Wolter eds.: Communication and Cybernetics, vol. 13]. \$16.40.¹

Reviewed by CHIN-W. KIM

This is a fascinating book. I read it through in one evening as if it were an intriguing novel. The contents in fact are intriguing and the book is written in a lucid style "readily intelligible to the general reader" (p. vi).

The book consists of seven chapters and conclusions. Self-explanatory chapter headings are:

1. Introduction and historical sketch (pp. 1-12)
2. Ecology (pp. 13-31)
3. Physics of the signal (pp. 32-43)
4. The mechanism of whistle production (pp. 44-52)
5. Phonology and phonetics of whistled speech (pp. 53-84)
6. Extra-linguistic information contents of the signal (pp. 85-95)
7. Whistling in the animal kingdom (pp. 96-106)

The middle three chapters (3 - 5) constitute the core of the book, and of these, Chapter 5 is the most interesting and even provocative, if not controversial.

A whistled language is a form of "tele"-communication still found scattered among different ethnic and linguistic groups, e.g., in Canary Islands, French Pyrenees, northeast Turkey, northern Mexico, etc. It is by no means a common phenomenon, notwithstanding the authors' claim that "it is in use at the present time in *many* parts of the world and ... is in *wide* distribution" (p. v; *emphasis mine*).

The authors point out that all the regions having whistled languages share common ecological and geographical features, namely, rough mountainous terrain and scattered settlements, which present difficulties in normal communication to those who cultivate the hillsides for agriculture or sheepherding. In fact these seem to be the necessary (but obviously, not sufficient) conditions for the development of a whistled language. The effective distance that a whistled signal can travel is said to be 2.3 - 4 km (=1.5 - 2.5 miles; p. 21), but sometimes upto 8 - 10 km! (5 - 6 miles; p. 40) under some ideal conditions (e.g., wind, temperature, humidity, etc.). Why whistles carry so far is an interesting question but is not satisfactorily answered in the book. Obviously its great intensity (110 - 120 db; p. 37) is one factor. Its distinctive color easy to be recognized among the environmental noise (cf. referee's whistles, sirens, etc.) is another. But in the end, the authors invoke "human attention" (Colin Cherry's *cocktail party's problem*) to explain the whistle's enormous range of propagation.

Before leaving the subject, I should mention perhaps the following. All photographs of the landscapes (Figs. 7 and 9) in which the locations of the observed whistlers and the recipients are indicated in numbers show curiously all the whistlers at the bottom of the picture and the receivers in the upper region. Perhaps it's a coincidence. Or does it imply that whistles only/always travel up but not down?

Another set of photographs that are to be appreciated but not too informative are Figs. 2-4, 15, and 26-30, all showing variants of the whistle method 2 using fingers (the method 1 is a simple labial whistle). What is precisely the role of the inserted finger(s)? Do they contribute to make the whistle's intensity and/or range greater? If so, why and how? What are some acoustic characteristics of the fingered whistles vis-à-vis the fingerless whistles? Despite the authors' disclaimer that whistles are not produced on the principle of edge-tone (p. 44), I am inclined to think, perhaps naively, that a finger inserted into the mouth simulates a small-angle wedge to create eddies. An X-ray picture on p. 46 (Fig. 26a) is quite instructive from this point of view.

Now, everyone knows that a whistle is a near-pure tone which, like a sine wave, is characterizable with three parameters: pitch, intensity, and duration. If someone thinks, however, that whistled signals are some sort of calls or codes whose different pitch contours and durations are idiomatically and idiosyncratically associated with some fixed meanings, he is in for a surprise. The authors state time and again that a whistled speech is *segmentalized*, with the articulatory information transposed onto the acoustic scale of frequency, of course. The fact that whistles are neither unitary calls (like animal calls) nor arbitrary codes (like Morse code) but are 'articulated' speech is evidenced by the fact that the 'segmental' composition of a whistled utterance is recognized by foreign whistlers, because there is a very close correspondence between the 'sound' systems of different whistled languages, just as a foreigner can recognize the segmental composition of Tom [tɒm] and transcribe it into his own script. Such a whistle "fulfills all the functions of speech, its use does not exclude puns, plays on words and kindred verbal performances" (p. 20), and as such, whistled languages are "not speech surrogates but adjuncts" (p. 107). What the authors are saying is that, despite some unavoidable limitations due to the inherent nature of the whistling mechanism (for example, it is not possible to have a distinction in voicing and nasality, although whistled Tepehuan is reported to have the nasal/oral distinction, p. 78, nor is it possible to produce bilabial consonants), whistles are actually *articulated*, or, more precisely, articulation goes on while whistling. In this sense, whistle becomes a particular kind of suprasegmental. Such a whistling would be a mirror-image of singing, for, while wide pitch variations accompany articulated utterances in the latter, articulation accompanies wide pitch variations in the former. It goes without saying of course that the frequency modulation in singing is done by the vibrating vocal cords, while in whistling it is done by the entire vocal tract. The pitch of the whistle is then deflected, as by closing different stops in a wind instrument, by intra-oral articulatory movements according to the resonance characteristics of the changing shapes of the vocal tract. It is not

surprising that the patterns of such frequency deflections in articulated whistles show considerable similarities, in frequencies transposed a few octaves upward, with those generated in a normal unwhistled speech. This is the very foundation upon which segmentability of whistled speech is based. For example, the distinction among different vowels is made with discrete intervals in whistled pitches whose direction resembles that of higher formants in normal vowels (although there is some adjustment in the whistled pitches of front vowels due to the constant lip-rounding in whistling). Other articulatory information is also transposed onto the pitch scale such that vowels have steady pitches, while consonants have complex gliding pitches. The following simplified generalizations of the gliding patterns for major places and manners of articulation should recall in one's mind the locus (hub) theory of the Haskins group.

Stops - silent periods, i.e., breaks in whistle
 Fricatives - gently sloping glides with short breaks
 Sonorants - continuous glides
 Bilabial - no glide
 Alveolar - long and wide glide
 Velar - short and narrow glide

Naturally, there are some inherent limitations. Anything that would considerably weaken the airflow which is vital for whistling will not be permitted. Thus, distinction in voicing and nasality is difficult if not impossible in whistled speech. It is also difficult to incorporate prosodic (suprasegmental) information into the whistle since the system can tolerate only so much pitch variations as phonological oppositions. Incidentally, the authors make a naive remark in this connection in p. 75:

"Admittedly a system of conventions could evolve that would get over these difficulties but users of whistled languages who are avid readers of CHOMSKY are not thick on the ground."

As if grammars or grammarians can enrich linguistic systems and guide the evolution of language!

Chapter 6 describes an experiment that the authors conducted in Turkey which was designed to determine the extent to which the whistled signals can convey such extra-linguistic informations as the sex, age, and identity of the whistler, in order to see if whistled speech is as versatile as ordinary speech in its extra-linguistic function, and to see if a simplification could be effected by examining extra-linguistic informations in whistled languages since their single phonetic exponent, namely frequency, is easy to quantify, while acoustic carriers of these informations in ordinary speech are too complex to be extracted easily. In any case, the result of the experiment showed that the receiver of a whistle could recognize the sender's sex with 75% accuracy, while unable to guess his/her age with any degree of confidence (57% error). The authors do not attempt to guess why sex recognition was much better than age discrimination (uniformly weaker intensity and/or uniformly higher pitch due to a shorter vocal tract in female whistles may be a factor), but only state, upon

examination of spectrograms of whistled utterances, that there are enough individual variations in the signals to permit the recognition of a whistler. But a very poor score in sender identification (73% error) is quite puzzling in light of the above statement. It makes us suspect that there is a parameter (pitch?) of sex recognition which is independent of others.

The last chapter 'Whistling in the animal kingdom' reviews recent researches in animal whistles, with the expressed hope that the information one derives from a comparative study of animal communication may show that man's communication is deeply embedded in the history of evolution -- namely, some men whistle presumably because their forebears or primitive kinsmen did.

There are several typographical errors in the book, none serious. But the following should be noted. On p. 16, *decay* should be *birth* or *genesis*, and on p. 53, a *voiceless* whistle should read a *voiced* whistle.

All in all, this is a very enjoyable, intellectually rewarding, and linguistically interesting book.

NOTE

¹The full version of this review will appear in the Journal of the Acoustical Society of America.

Distinctive features: theory and validation. By SADANAND SINGH. Baltimore, MD.: University Park Press, 1976. Pp. viii, 269. \$16.50¹

Reviewed by CHIN-W. KIM

The book is designed "primarily for students and professionals in the fields of speech pathology and audiology" (p. vii). The concept of distinctive features (DF henceforth) is explored for its use as a diagnostic tool in speech and hearing disorders. In this sense, the subtitle 'Theory and validation' is a bit misleading. 'Theory and application' would be a better one, for the book really has nothing to say about the validity of the DF theory.

Central to Singh's thesis is the notion of phonetic distance (phonetic dissimilarity) as displayed by the feature differences. That is, while in terms of atomistic phonemes, each phoneme would be equally different from any other, the extent of the differences between segments specified in terms of DFs can be measured precisely by counting the number of different features (more precisely, different value specifications for the same set of features) that the segments possess. The greater the number, the greater the distance. To Singh then, DFs are "pillars of distinction" (p. 22) standing between different phonemes, some pillars stronger than others.

Diagnostically, a speech disorder/error disregarding "strong pillars" would be judged to be more serious, and corrective measures would be taken accordingly. Indeed, Singh recommends (p. 28) that, when examining a child with articulatory problems, his phoneme score be transferred to a DF score, for a DF matrix will unfold the magnitude of phoneme substitution errors, and that, once this is determined, a therapeutic work begin with the most serious error. (Why this should be so is not stated clearly. It is presumably because more serious errors present greater problems and are less negligible, but from a patient's point of view, the least serious error may be most easily correctible.)

Singh recognizes that the number game doesn't work always, for some features may be more important than others, for example, nasality more than voicing, and the latter in turn more than the place of articulation feature (i.e., *min* for *bin* is considered to be a more serious than *bin* for *pin*, which in turn is more serious than *tin* for *pin*, although all three cases involve only one feature error). Singh does not give any principles to set up this sort of feature hierarchy (which he calls "generative" hierarchy (p. 13) for an unexplained reason) among DFs. Incidentally, this hierarchy is almost reversed on p. 71 where Singh cites a "true" perceptual feature system established by Singh, Woods, and Becker (1972) which showed a different rank order among five features as follows: 1. Place of articulation, 2. Nasality, 3. Sibilancy, 4. Voicing, and 5. Plosiveness.

Chapter 2 reviews existing DF systems dealing with consonants. Singh justifies separation of consonants from vowels on the ground that they

employ different strategies both in production and perception. The review includes the following six: Jakobson, Fant, and Halle (1951), Miller and Nicely (1955), Halle (1964), Singh and Black (1966), Wickelgren (1966), and Chomsky and Halle (1968). From a linguistic point of view, only the first and the last can be said to be serious proposals of DF systems. Halle (1964) is basically the same as Jakobson-Fant-Halle (1951), and others are not original and/or alternative proposals of DF systems but merely perceptual studies using the DF matrices, some employing heuristic features. A serious proposal of a DF system that Singh fails to cite is Ladefoged (1971). Interesting is Singh's claim that, while a phonological DF system (such as Chomsky-Halle 1968) may be satisfactory from a theoretical (linguistic?) point of view, it has been found unable to account for speech production and perception errors (e.g., fully one-third of a dozen consonant features of the Chomsky-Halle DF system could not account for any variances in the perceptual errors of English consonants, p. 69), and therefore that a new "true" perceptual feature system is needed. One of his own studies, i.e., Singh, Woods, and Becker (1972), based on a "multidimensional scaling analysis", is offered as a potential candidate for such a true perceptual DF system.

Chapter 3 reviews three DF systems of vowels: Jakobson-Fant-Halle (1951), Peterson and Barney (1952), and Chomsky-Halle (1968). Again, it cannot be said that Peterson and Barney ever proposed their pioneering acoustic study of English vowels as a DF system. To a certain extent, most vowels can be given a two-formant characterization, but no one has proposed the relative formant positions as DFs. Unlike in the case of DFs of consonants, it is stated that the existing DFs of vowels are in total agreement with the experimental results of multidimensional scale analyses of perceptual patterns.

Chapter 4 is an extension of Chapter 2. Since there is so much disagreement among the proposed DF systems of consonants, Singh decides to compare them in the form of counting the frequency of each featural term among the different systems, and finds that features like *nasality* and *voicing* appear in most systems, while some (e.g., *coronal*) appear only idiosyncratically. The implication is that the most frequent feature is the most valid and the least questionable one. This assumption, however, is not tenable, and the whole chapter is a pointless exercise in tabulation. What is more meaningful would be some statements of equivalence relations, e.g., Chomsky-Halle's *+continuant* = Miller-Nicely's *+affrication* = Singh-Wood-Becker's *-plosive*, etc.

Having stressed the importance of perceptual behavior in devising a "true" DF system in Section 1, Section 2 presents a historical survey of perceptual studies done in the DF format in the past two decades; Chapter 5 on consonant perception and Chapter 6 on vowel perception. The ultimate goal of the section is stated to be "to propose a theory of speech perception based solely on the psychological reality of distinctive features" (p. 101). The survey takes the form of giving a summary of each of the relevant publications (including some "in-press" items) in chronological order, without integrating, cross-referencing, or giving Singh's own views.

For example, Wang and Bilger's (1973) conclusion that there is little support for the hypothesis that natural features or feature systems exist is given without any comment or a counterargument (p. 123), and this by an author whose primary aim in writing a book is to prove precisely the opposite! This form of survey is followed throughout the rest of the book. In fact, the book ends with one of these surveys. I could not help but feel that the bulk of the book (especially Sections 2 and 3) consists of copies of Singh's file of 5 x 7 cards.

Some of the items reviewed seem to be irrelevant. For example, I fail to see how two studies by Danhauer and Singh (1975a/b) on speech perception by hearing-impaired subjects can tell us anything about the perceptual strategies of normal subjects that are said to form the basis of a posteriorily constructed feature systems. Singh states that the ability by hearing-impaired subjects to perceive some common features demonstrates the independence of features from close auditory ties and indicates that these perceptual features supersede man's auditory and productive capabilities (p. 144). But if a near-blind man develops unusual acuity in hearing, does it mean that hearing supersedes seeing and that hearing is a part of strategies in visual perception in normal men?

In any case, the most persistent perceptual features in the surveyed literature are said to be voicing, nasality, sibilancy, continuancy, sonority, and the place of articulation (front/back). Singh is satisfied that these six perceptual features deduced in the a posteriori analyses are essentially similar in nature to the major features in the a priori feature systems. For vowels, however, even this much synthesis is not given, and the reader is left wondering whatever happened to the stated goal of "proposing a theory of speech perception."

The third and final section deals with the role of DF in language acquisition, articulation deviation, and auditory discrimination in three chapters in that order. Chapter 7 begins with an introduction of Jakobson's famous 'Kindersprache', but after a survey of more than a dozen studies on language acquisition utilizing DF concepts including a detailed and lengthy (26-page) review of Weiner and Bernthal: 'Acquisition of phonetic features in children two to six years old' (in progress, in press?), there is no mention whether the recent studies have corroborated Jakobson's classical observation on the order of acquisition of phonemes. Interesting error patterns are only graphically reported but never explained.

A basic premise of Chapter 8 is that articulatory deviation is mainly a disorder in DF misapplication and therefore that it is only logical to describe phonemic deviances in terms of DFs (p. 205). Again, the relevant literature is reviewed in a 5x7 card fashion, purporting to demonstrate the efficiency of DF theory in the diagnosis and treatment of articulatory disorders. Chapter 9 reviews a half dozen studies showing evidence that it is the knowledge of DFs that a listener invokes in perceiving speech sounds.

It is probably true that some sort of subphonemic components (that may be called DFs) are operants in speech production and perception, and that speech errors in articulation and discrimination often reveal some interesting facts about how man processes linguistic signals (cf. Fromkin 1971). But if one constructs an a posteriori feature system on the basis of experimental tests on perception and finds that such a system is not consonant with an articulation-based feature system, and furthermore, goes on to say that only the former is a "true" system, then unless one has strong evidence to show that speech is all perception and not at all articulation, it would be nothing but a heuristic statement. Also, the fact that speech errors tend to cluster around a parameter may be a necessary, but not a sufficient, condition to postulate that parameter as a DF. In any case, since there is more than one articulatory way to generate auditorily similar signals (e.g., both lip-rounding and larynx-lowering will produce a "flat" sound due to an extended vocal tract, and both labials and velars will produce similar "grave" spectra), a question arises as to how one may reconcile the differences between an articulation-based feature system and a perception-based feature system. Singh favors the latter without giving any convincing argument. In my view, an ideal feature system cannot be totally articulatory nor wholly perceptual, for language is both spoken and heard. A viable compromise may be found, but ultimately, there may have to be two separate feature systems. The instability of language that results in constant sound change may in fact be due to the discrepancy between the two, for if there were always an isomorphic one-to-one correlation between production and perception, between encoding and decoding, then there would be no room for confusion and sound change.

DF may be useful as a diagnostic and therapeutic tool in speech pathology. But the motivation underlying its original proposal was anything but clinical in nature. It was intended to characterize sound patterns of language in a systematic and universal way. Such a system may or may not serve as a useful instrument in clinical audiology, just as a theory of zoology may or may not serve a useful purpose in veterinary medicine. Of course, if it serves both purposes adequately, so much the better. Singh's book is an analytical attempt to give a pragmatic function to the theoretical concept of DF. Its presentation is orderly and detailed, but its goal is ornery and derailed. At least, it is an admirable collection of annotated bibliography on articulation deviation, perception errors, etc., and as such, it should prove to be useful to students in speech pathology and audiology, but to a linguist it hardly offers a new insight about the nature of the sound of language.

NOTE

¹A condensed version of this review will appear in *Asha*, a Journal of the American Speech and Hearing Association.

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